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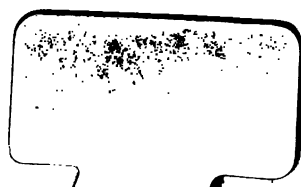
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# **BRITISH SPIDERS.**





# BRITISH SPIDERS:

AN

INTRODUCTION TO THE STUDY

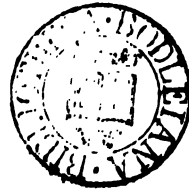
OF THE

## ARANEIDÆ

Of Great Britain and Ireland.

BY

E. F. STAVELEY.



LONDON:

LOVELL REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN.

1866.


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## PREFACE.

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THE present little work lays no claim to originality, but, being of a popular character, it seemed unnecessary to fill its margins with references to the sources from which various facts and statements have been drawn. The writer therefore here begs to acknowledge Mr. Blackwall as the chief authority, his work on British Spiders having been most freely used. The writings of MM. Latreille, Simon, and several others, have also have been made use of without acknowledgment in the body of the work.



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6. *Oonops pulcher*, ♀.
7. *Scytodes thoracica*, ♀.

#### ERRATA.

Page 6, line 24, *for* has said *read* has been said.

- " 53, " 17, *for* III. *read* IV.
- " 70, " 11, *dele* within a rolled-up leaf.
- " 85, " 7, *for* *caespiticolis* *read* *caespiticolis*.
- " 91, " 28, *for* said in this *read* and near this.
- " 127, " 15, *for* two-toothed *read* two. Toothed.
- " 138, " 7, *for* Plate I. *read* Plate II.
- " 141, " 2 from bottom, *for* 3 *read* 2.
- " 144, " 18, *for* 4 *read* 3.
- " 146, " 21 and 22, *for* 5 *read* 4.
- " 197, paging, *for* 179 *read* 197.

# BRITISH SPIDERS.

(*ARANEIDÆ.*)

---

## CHAPTER I.

### INTRODUCTORY REMARKS.

THE Spider has been recognized and distinguished in all ages and in almost all countries by one function, which has been proved to be so perfect a characteristic that the scientific division of the present day is founded upon it. Thus, whilst other groups have been admitted into the large class (*Arachnida*\*) which derives its name from the spider, the spider itself has been separated from them under the name of *Arachnida filosa*, or the thread-making *Arachnida*.

We may go further back than to the ancient fable of Arachne to find the idea of spinning connected with the name of this animal. The Hebrew name is supposed to be compounded of two words, *to weave* and *agile*, as if *agile weaver*. In the Arabic the same meaning is found, and the Greek *arachne* is derived from the Phenicio-Shemitic *arag*, to weave; whilst the Latin *aranea*,

\* *Αραχνη* (*arachne*), a spider; *ειδος* (*eidos*), resemblance.

French *araignée*, Italian *aragne*, Spanish *araña*, bear evident marks of a more or less direct derivation from the Greek word.

Our own word spider, although a few fanciful derivations have been assigned to it,\* appears to be the spinder or spinner, from the Anglo-Saxon *spinan*, to spin. The German name is *Spinne* (*spinnen* being to spin), and the Swedish is *Spindel*.

By some of our old writers the spider is called the Spinner and Spither; perhaps the earliest form is that found in the early English Psalter (printed by the Surtees Society), where (Ps. lxxxix.) it is called Spinnand-web.

An exception to this rule is, however, to be found in the Anglo-Saxon name *Atter-coppa*, *i. e.* Poison-head; whilst the Dutch name, *Kop* (whence our cobweb) appears to be given to the animal with reference to its round form, *kop* or *cob* signifying the head or anything round. Skinner associates the idea of spinning with even this last name, saying that it is "perhaps from the Anglo-Saxon *coppe*, apex, . . . because they build and weave at the tops of buildings." The former derivation appears, however, to be the most probable.

But whilst the possession of the art of spinning seems to have been considered the chief characteristic of spiders, scarcely less prominent have been certain moral attributes, poets and philosophers alike having almost universally cited them as the representatives of

\* Junius derives it from the Greek *σπινδεν*, to extend (a word which is, by the way, invented by the grammarians as a root for *σπινδης*, *spidees*, far-stretched),—the spider extending his web. Johnson suggests *Spy-dor*, the insect that watches the dor,—from *speiden* Dutch, *speyden* Danish, to spy, lie upon the catch; *dor*, *dora*, Saxon, beetle or humble-bee.

cruelty and treachery. There may perhaps, however, be some natural connection between treachery and the art of spinning, as Chaucer tells us that

“Deceite, weping, spinning, God hath yeven  
To woman kindly, while that they may liven.”

That spiders are ferocious in their habits is undeniable, the males fighting with great fury, and the females, usually larger and stronger than the males, frequently devouring their partners ; but it seems probable that the feeling of disgust commonly excited by their general appearance has had much to do in giving them so ill a name, as, amongst some insects, a more wanton kind of cruelty appears to prevail, namely, the desire of inflicting death without the excitement of rage or of the want of food ; whilst, as Kirby and Spence remark, the Mantis (*Mantis religiosa*), an insect yielding to none in ferocity, “has obtained a reputation for gentleness and even for sanctity.” A reputation better earned, if we may believe an ancient tradition, by those spiders at least who, when St. Felix of Nola was pursued by pagans, curtailed with their webs the hole through which he had found entrance to some ruinous place of refuge, and concealed him for six months.

The venomous nature of spiders has been much insisted on, probably from the same feeling of dislike, as, although the spider undoubtedly secretes a poison which disables and kills his victims, or, to speak more poetically, if rather less accurately, although—

“Nature, that gaue the bee so feate a grace  
To finde hony of so wondrous fashion,  
Hath taught the Spider out of the same place  
To fetch Poyson by straunge alteracion—”\*

(Wyatt, 1538-1603)

---

\* There is a proverb to the same effect (see Ray's ‘English Proverbs’),



there is no English species capable of inflicting on man a poisoned wound of any severity.

There are some foreign species of which the poison is very virulent, their bite being sometimes followed by death ; but we can hardly credit the assertion of Scaliger, quoted by Derham, that there were in his country " spiders of that virulency, that if a man treads upon them, to crush them, their poyson will pass through the very soles of his shoes." Scaliger was a native of Gascony.

Ireland seems (at least in former times) to have been a more fortunate country, spiders being included in the list of noxious animals excluded from that island, as we find by lines in a poem of John Philips, published in 1706:—

" Happy Ierne, whose most wholesome air  
Poisons envenomed spiders, and forbids  
The baleful toad and viper from her shore."

The unkindest cut of all is an idea expressed by Sir Thomas More, but not confined to himself, that "as for spiders it is evident that they are of the *τα αυτοματος γενομενα*,\* as Aristotle phrases it, and are generated of mere sluttery and putrefaction." Like most other creatures popularly referred to the same origin, they act as a corrective, if it be true (as is affirmed) that they have been found actively employed in clearing bedsteads of unwelcome colonists.

Notwithstanding these prejudices, there are some often-quoted instances of persons having tamed and

which is quoted, or perhaps originated, by Bishop Latimer, who says—"Where the bee gathereth honey, even there the spinner gathereth venome." (Latimer's Letters, in Foxe.) And the Spaniard has "Cuando zuga la abeja miel torna, y cuando la araña ponzona."

\* Things produced spontaneously.

made companions of these little animals. Kirby and Spence tell of a Frenchman who tamed and fed eight hundred spiders; the learned Magliabecchi, librarian to the Duke of Tuscany, showed more love for spiders than for any other living creatures; and Pelisson, one of the first geniuses of an age not wanting in great men, found comfort during his confinement in the Bastille in the society of a spider, which he not only tamed, but taught to come to its food at the sound of a musical instrument.

Some old lines in the '*Anthologia Borealis et Australis*' record a similar instance of companionship:—

“In this wild, groping, dank, and drearie cove,  
Of wife, of children, and of health bereft,  
I hailed thee, friendly spider! who hadst wove  
Thy mazy net on yonder mouldering raft:  
Would that the cleanlie housemaid's foot had left  
Thee tarrying here, nor took thy life away;  
For thou, from out this seare old ceiling's cleft  
Came down each morn to hede my plaintive lay,  
Joying, like me, to heare sweete musick play,  
Wherewith I'd fein beguile the dull, dark, lingering day.”

The love of music spoken of here has been shown in other instances. It has said that spiders have come down from the ceiling during concerts, returning at the cessation of the music. A musician in the habit of using a harmonium every evening at a certain hour, observed for a long time that a spider always made its appearance upon the instrument when the playing was going on.

A curative property has been attributed to the spider, and to the web of certain species.

Eleazar Albin, the author of '*A Natural History of Spiders and other curious Insects*' (1736), gives as a

reason for publishing his book, his hope that his researches might "be no less agreeable than useful to the public in the cure of intermitting fevers." He cites a quaint and amusing prescription, by the use of which he asserts that he has cured many persons of stubborn and long-continued tertian, quartan, and quotidian fevers, where bark and other remedies had failed, "particularly some of the servants of the Honourable Colonel *Schutz*, as also Dame *Hughs*, of *Tottenham Court Road*, of a *tertian* ague of three years' continuance," etc. The medicine prescribed consists of the web of the house-spider mixed with mithridate. To this he adds that he has cured several children of agues "by hanging a large spider, confined alive in a box, about their neck, reaching to the pit of the stomach, without giving any internal remedies."

He also mentions the use of the web (continued to this day) as a styptic.

Dr. Watson, in his 'Lectures on the Principles and Practise of Physic' (vol. i. Lect. 42, "On Agues and Intermittent Fevers"), quotes some strong testimony to the success of the application of the first of these remedies, which he states to have been tried on a somewhat large scale. He gives, on the authority of Dr. Craigie, the following facts:—

In 1760, some prisoners from the squadron of *Thurôt*, who were landed in the Isle of Man, suffered from agues which resisted bark and other ordinary remedies. At the recommendation of an old French physician, Dr. Gillespie made trial of the web of the black spider inhabiting barns and cellars, and found it efficacious in more than sixty cases of different types. He afterwards tried the same remedy with success in Scotland.

Dr. Gillespie recommended this use of the cobweb to Dr. Jackson, who, in 1801, made some very satisfactory trials of it in the hospital of the army dépôt in the West Indies, and found that it not only cured cases of ague which had been affected but slightly, or not at all, by the usual remedies, but also that, under certain conditions, it removed pain, delirium, griping, and other distressing symptoms in cases of continued fever.

After enumerating other substances used in the treatment of ague, Dr. Watson passes on to the mention of cures effected by agents operating through strong mental emotion on the nervous system, such as (amongst others) "swallowing a spider gently bruised and wrapped up in a raisin, or spread upon bread and butter; keeping a spider suspended from the patient's neck in a nutshell, till it dies;" the disgust and horror occasioned by which seem occasionally to have wrought cures, as have also sudden joy, terror, and, as in the case of charms, implicit faith; and whilst a less acute mind might have at once refused all credence to such means of cure as improbable or ridiculous, he, receiving the evidence, draws from it a conclusion that this disease may be essentially a disease of the nervous system. Thus, even through the antipathy of which we have spoken above, this little animal has been rendered beneficial to man.

Several attempts have been made to use in manufacture the cocoon silk spun by the spider. More than a century and a half ago, a M. Bon, of Languedoc, made some silk stockings and mittens of spider silk. The silk was of a beautiful grey colour, and was said to be nearly equal in quality and strength to that of the silkworm. M. Bon published a dissertation on the discovery, and the Royal Academy of Paris employed M. Réaumur to

inquire into the subject. In their memoirs for the year 1710, his statement of the difficulties attendant on the use of this substance as an article of manufacture appeared.

The great natural ferocity of the spiders formed one objection, rendering it impossible to keep them together. Some thousands were placed in cells containing from fifty to two hundred each, and were soon reduced to one or two in each cell, the larger killing and eating the smaller. Besides this, he reported the spider's silk to be inferior in strength and lustre to that of the silkworm. The thread of the cocoon he found to have about eighteen times the strength of that of the web, whilst one thread from the silkworm's cocoon was equal to about five threads from the spider's. The lustre of the manufacture was necessarily less when five fine lines with shadowy interstices were required to take the place of a single thread; and this quality was further diminished by the necessity of carding the spider's silk, which could not be wound like that of the silkworm, and which by this process was torn and rendered uneven.

He also found by calculation that of the spiders which yielded the most silk, 27,648 individuals were required to produce one pound, and the cocoon silk (or that surrounding the eggs) only being available, these must all be females, whilst the same quantity of silk would be spun by 2304 silkworms.

Kirby and Spence quote a statement that in Paraguay the silk of a spider, which forms a round cocoon of about an inch in diameter, is spun by the inhabitants on account of the permanency of its yellow colour; and Mr. Blackwall mentions a Spaniard also as having manufactured the silk of the spider.

An old writer\* informs us that "Spynners ben tokens of divynation, and of knowing what wether shall fal." "But there is no liuing creature that foretellethe not somewhat, either by his motion or encountrie. Diuination serueth him that will obserue the same. It therefore appertaineth vnto him that hath addicted his minde thereunto;"†—and to him therefore shall it be left to work out this part of the subject. As to the second fact, it is said that the instinct of the spider with regard to the approaching state of the weather is so sure, that its manner of weaving its web affords a useful prognostic. A web spun when windy or rainy weather is approaching, has its radiating or foundation threads much shorter than those of a web spun before fine and calm weather. The repairing of an injured web tells of the approach of fair weather, the spider being too provident to expend his silk to no purpose. It is also said that if the spider is seen working at alterations in the web between the hours of six and seven on a summer evening, the night will be clear and calm.

Much attention has been drawn to the fine floating webs which sometimes seem to cover the earth, and almost to fill the air on still summer and autumn days, and whilst their history belongs rather to that part of the work which treats of the habits of spiders than to this place, it may not be unfit to notice here some of the strange opinions which have been entertained concerning the Gossamer.

Of these, one of the strangest, as proceeding from a scientific man, was that contained in the 'Micrographia' of Dr. Robert Hooke, printed by the Royal Society in

\* Transl. of Barthol. de Prop. Rer. Nat.

† Seneca, 'Of Natvrrall Qvestions,' trans. by Thomas Lodge. 1620.

1664, namely, that it "is not unlikely but that those great white clouds which appear all the summer-time may be of the same substance" with the gossamer, which he describes as a lock of cylinders "much resembling a cobweb, . . . looking like a flake of worsted produced to be spun, though by what means they should be generated or produced is not easily imagined."

The poets seem to be agreed as to the material of the gossamer. Quarles says—

"And now *autumnal dews* are seen  
To cobweb every green."

Spenser describes "a vele of silk and silver thin," than which

"More subtle web Arachne cannot spin,  
Nor the fine nets which oft we woven see  
Of *scorched dew* do not in th' ayre more lightly flee;"

and Thomson calls them "*filmy threads of dew evaporate.*"

In France the gossamer was supposed to be the woolly or cottony matter produced by the *Cossus*, an insect abundant on vines; and in England it was formerly believed to cause the rot in sheep.

The word is found in an early form as "*gar-summer*," and is supposed to mean the summer hoar as opposed to the hoar-frost of winter,—*gar* or *gor* signifying hoar; and it appears that the gossamer was ranked with atmospheric and similar phenomena in old times, from Chaucer's lines—

"Sore wondren some on cause of thonder,  
On ebbe and fload, on gossomer, and on mist."

In German, the gossamer is *Sommer-weben*, the webs of summer.

## CHAPTER II.

## STRUCTURE OF THE SPIDER.

THE spider is composed, externally, of two parts. The fore part consists of the head and chest, which are not separate, as in insects, but form one mass, called the cephalothorax (from *κεφαλη*, *cephale*, head, and *θωραξ*, *thorax*, chest). Of this, the covering of the upper side is called the shield, and that of the lower, the sternum or breastplate.

The hind part of the body is connected with the cephalothorax by a fine tubular stalk, and is called the abdomen.

On the upper part of the cephalothorax, in front (Fig. 1), are the eyes, which are simple, and are two,\* six, or eight in number. They vary much in size and in the manner of grouping, and form an important characteristic in the distinction of genera. They are sometimes raised above the level of the cephalothorax and seated on small tubercles, some-

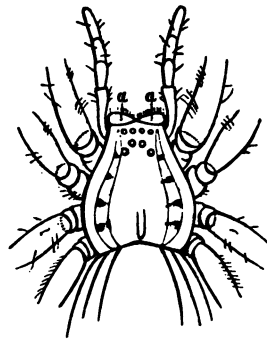


Fig. 1.

Upper side of cephalothorax.

\* There is no English species known with two eyes.



times they are placed on conspicuous projections of the cephalothorax.

Irregularities frequently occur in the number of the eyes, one or two being deficient.

Latreille mentions that they are said to shine in the dark like the eyes of cats; whilst spiders appear to be able to see both by day and by night.



Fig. 2.  
Profile of cephalothorax.

Below the eyes and above the mouth is a pair of jaw-like organs, known as the falces, forceps, frontal claws, or poison fangs (Figs. 1 *a*; 2 *a*; 3; 4 *a*). In all the English genera, except *Atypus*, these are attached

to the face by joints, either in a perpendicular position or with a slight inclination towards the breast (as Fig. 2 *a*), and have a lateral motion like the jaws of insects. In *Atypus* the falces are placed horizontally, and move up and down.

Each falx is composed of two parts (Fig. 4 *a*), the base and the fang. The fang is hard, sharp, curved, and moveable, and is attached by a joint to the base, which has a groove on the inner edge, into which the fang is usually folded down when at rest. There is frequently a row of teeth on one or both edges of the groove.

These organs appear to resemble mandibles in their functions, but cannot be classed as such, because, although used to assist in the process of eating, they are above, and not part of the mouth. Their office appears to be to catch and hold the prey, which they also kill, by means of a poison secreted in a gland (Fig. 3) within the cephalothorax, at the base of each falx, and near the extremity of the gullet. This is somewhat, if not altogether,

of the nature of a salivary gland, and secretes a poison which flows through a canal in the falx, and is emitted at a small opening in the tip of the fang. In some species the falces are united.



Fig. 3.

Section of cephalothorax and falx, showing the poison gland.

Below the falces is the mouth. This is furnished externally with an upper and under lip, and a pair of maxillæ or jaws.

The upper lip shows only a hairy tip, which is, in fact, the termination of the palate. The lower lip (Fig. 4 *b*) is attached to the sternum or breastplate (Fig. 4 *c*). The maxillæ (Fig. 4 *d*) are placed in each side of the lower lip, and are furnished with a pair of long five-jointed palpi (Fig. 4 *e*).

These vary greatly in the two sexes. In the female they resemble small legs, and usually have one minute-toothed or plain claw at the tip. In the male the terminal joint is very much enlarged, and presents a complicated structure, the full development of which marks the maturity of the spider. This part, however, though of great scientific value in distinguishing species, requires so minute a microscopical examination as to render it of little value to the ordinary student.

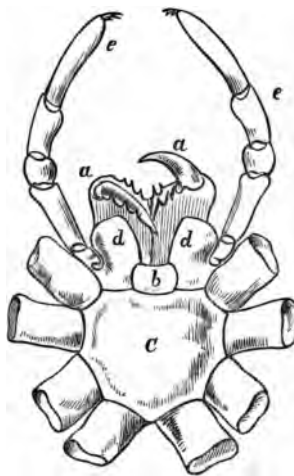


Fig. 4.

Under side of cephalothorax of *Dolomedes mirabilis*.

The legs are eight in number, and are connected by joints with the cephalothorax. They are (except in one foreign genus) composed of seven joints. The first is called the haunch; the second and third form the thigh; the fourth and fifth, the shank; and the sixth and seventh, the foot. Of these, the first, second, and fourth joints (*i. e.* the haunch and the upper joint of the thigh and of the shank) are usually short.

On the foot are two, three, or more curved claws, which are sometimes plain and sometimes are toothed like a comb. When the claws are only two in number they are placed side by side, and have occasionally a scopula or brush, or pad of large hairs, beneath them. When there are three claws, they are of unequal size: the two larger are placed side by side, one smaller, which is suddenly bent down from near its base, is below them. When there are more than three claws, the additional claws or spines are smaller, are of a different form, and are placed at the sides of and below the foot, one (or more than one) being sometimes a little curved towards the larger claws, and moveable, answering the purpose



Fig. 5.  
Calamistrum.

of a thumb. There is also occasionally, as in the family *Ciniflonidæ*, a double

row of curved spines (Fig. 5) in the upper joint of the foot. These are called calamistra, and are used in the construction of the web.

The legs are hairy and spinous, and are of various relative lengths and proportions.\*

\* Their relative length affords a useful and easily observed character, but the varying width of the breastplate, to which they are attached, renders it necessary to separate them from the body for measurement.

The above-mentioned parts, namely, the cephalothorax and its appendages, vary much in form, and the variations are used as specific characters.

The cephalothorax is in different species more or less oval, heart-shaped, or oblong. The covering is usually of a leathery rather than of a horny substance, but is hard in some species. The surface is hairy or naked, and sometimes glossy. In the medial line of the shield and near the base, there is usually a small longitudinal indentation (Fig. 1, p. 11), from which a series of wrinkles or furrows diverge to the places where the legs are inserted.\*

The maxillæ and lower lip afford characters separately and in their relative position.

The lip is more or less semicircular, triangular, or square, and is sometimes notched at the tip.

The maxillæ are rounded, pointed, or cut aslant at the tip, which is hairy. They are sometimes squarish, sometimes much curved at the sides, sometimes dilated at the tip or at the part whence the palpi spring. They are set straight or inclined towards each other, and sometimes curve round the lip. They have usually, if not always, a row of teeth on the edge near the tip.

The breastplate is oval, round, heart-shaped, or squarish. The sides are scalloped, and there are sometimes small projections near the legs. The surface is hairy or naked, and sometimes glossy.

The second large division of the spider is the abdomen. This varies much in form, being egg-shaped, nearly globular or cylindrical; flat, angular, or very convex above. It is hairy or naked, sometimes glossy.

The integument is occasionally hard, but more com-

\* These wrinkles are barely indicated in the figure.

monly soft. The part nearest to the cephalothorax is called the base.

At the extremity of the abdomen are two, three, or four pairs of spinnerets. These are jointed and vary in form and in length. In some genera the spinnerets are cylindrical, the upper pair being very long and having a free motion; in others they are nearly equal in length, short, and cylindrical or conical; and sometimes they are short and leaning towards each other, the group bearing a rosette-like appearance. The tips and lower surfaces of these spinnerets are furnished with numerous minute tubes, through which issues the silk. This is a viscid fluid, secreted within the abdomen in glands, which communicate with the spinnerets by small tubes or ducts, and becomes hardened immediately on being exposed to the air.

On the lower side of the abdomen, near the base, is situated the breathing-apparatus, consisting externally of two or four whitish, brownish, or yellowish scales, having at their hinder edge a small transverse slit.

The hinder pair of these breathing-holes is present (amongst English spiders) only in the genera of the family *Dysderidæ*. They communicate with *tracheæ* or air-tubes.

The front pair of breathing organs is always present, and is of the nature of true gills. Each scale is the covering of a cavity, in which are about fifty or sixty extremely thin triangular white leaflets, fastened together at the edge of the breathing-hole. Each of these leaflets is double, or is, in fact, a flat pouch, with an opening on the lower side communicating with the outer air.\*

\* The layers of which the gills are composed, are most easily observed in specimens which have been long dried, or on which boiling water has been poured.

The act of breathing is performed by a simple and beautiful arrangement. Inserted in the envelope of the gill is a tough ligament, which, passing upwards, is attached to the pericardium, or membranous covering of the heart. The dilatation and contraction of the heart consequently causes the gill to close and open, and alternately empties and fills it with air.

Between the gills there is, in the female, an opening, in which the oviducts terminate.

The circulatory system of the spider is simple, but of a nature analogous to that of the higher orders of animals. The blood is a colourless liquid, holding in suspension the blood disks or corpuscles, which, as in reptiles and fishes, are of an oval form. The heart is a long muscular vessel, placed lengthways in the upper part of the abdomen (Fig. 6 *a*), enclosed in a thin membranous bag or pericardium, and is divided into four chambers, each of which has a small orifice opening into the pericardium. From the chamber nearest to the cephalothorax, proceeds the artery or aorta, which runs through

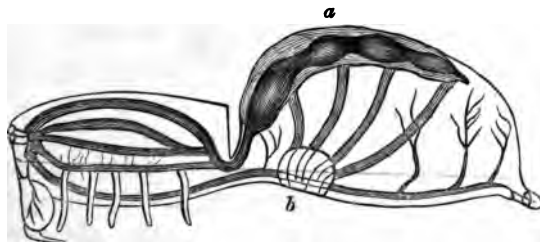


Fig. 6.  
Heart and arterial system.

the stalk connecting the abdomen and cephalothorax, and is divided in the cephalothorax into three pairs of arteries. The upper pair sends off numerous small

vessels to the eyes, the falces, and the organs of the mouth. The middle pair supplies the digestive organs with blood; and the third and lowest sends blood to the legs. In the fore part of the cephalothorax these arteries reunite and surround the nerve-mass, which represents a brain, forming there one large canal, called the abdominal aorta, which runs backwards along the lower part of the cephalothorax and abdomen to the spinnerets, sending out small vessels in its course to the various abdominal organs.

The blood, which during its progress is undergoing the loss of its nutritive property, is then delivered, through trenches or channels running amongst the muscles and other organs (and exactly performing the office of veins), into two large receptacles, which lie along the under side of the abdomen and communicate with the gills (Fig. 6 *b*), in which the blood is exposed to the renewing action of the air, and whence it returns, through four large vessels, to the pericardium, which thus performs the office of auricle. Thence it re-enters the heart itself, from which it is again expelled by a muscular contraction, to repeat its circuit through the body.

The liver and digestive organs are further supplied by additional vessels proceeding from the heart.

The preceding account of the respiration and circulation in spiders, shows their claim to a higher rank in the scale of creation than that of insects, in which the systems of arteries and veins being entirely wanting, there can be no true circulation; and, there being no lungs, gills, or centre of respiration, the oxygenation of the blood is performed by its exposure to air admitted through a series of breathing-holes into two main tracheæ or windpipes, and thence carried by innumerable tracheal branches to

every part of the body ; whilst in spiders, although tracheæ are also found, there is a circulatory and respiratory system the same in principle and even, in some degree, in detail, as that of vertebrate animals.

The alimentary organs of the spider are complicated, and occupy a large part of the cephalothorax and abdomen.

The gullet opens into a large stomach, of remarkable and complicated form, situated in the upper part of the cephalothorax. This stomach is in the form of a broad tubular ring, from which radiate ten cylindrical tubes. These, reaching to the sides of the cephalothorax, fold under and meet in a second stomach placed below the first. From the second stomach a large tube or alimentary canal runs to the extremity of the abdomen. Near the termination of this, and below it, is a large pouch.

The alimentary canal is surrounded by the liver, which is composed of a large mass of bladders in which the bile is secreted. These bladders send out little tubes which, combining, form four large vessels opening into the alimentary canal.



Fig. 7.

Stomach, alimentary canal,  
liver, etc.

The action of the stomach is produced by a muscle, which, inserted in a solid substance between the two stomachs, passes upwards through the middle of the



upper stomach, and is attached to the shield above. The contraction of this muscle, compressing the upper stomach, forces its contents through the radiating reflexed tubes into the lower stomach, whence they pass into the alimentary canal. There they are exposed to the action of the bile, the process of digestion and absorption is completed, and the innutritive portion which has accumulated in the terminal pouch is thence ejected.

It is supposed that the purpose of the remarkable complication of form in the upper stomach is, by retarding the progress of the food, to prolong the action of the gastric juice, whilst it also exposes it to a greater extent of absorbent surface.

The nervous system of spiders is, with some modification, similar to that of insects,—consisting of ganglions or nerve-knots, which form two large masses situated in the cephalothorax, and send off nerves to every organ of the body. There is, therefore, no true brain or spiral chord, as in the Vertebrata, while the ganglions differ from those of insects in being concentrated, instead of, as in these, forming a series distributed through the length of the body.

The muscles appear to be the same as in insects. They are pale and fibrous, and distinctly marked with transverse striæ or channels. As in insects, also, the muscles are attached to the interior of the shell or covering of the animal, there being no internal framework answering to the skeleton of animals of a higher order.

The muscles of the cephalothorax, which move the legs, palpi, etc., are attached to the shield at a point marked by an indentation in the cephalothorax (Fig. 1, p. 11) which has been already described.

In the abdomen the principal muscles are attached to a membranous plate near the gills.

Of the senses of spiders there is much to be yet learned. That they are possessed of the sense of touch, and that they see and taste, there appears to be no doubt, although the presence of this last sense is deduced from observation of their habits and not from a knowledge of the organ in which it resides. Their sense of hearing has been illustrated in the preceding chapter, but of this also the organ remains to be discovered; whilst we are altogether ignorant regarding their possession of the sense of smell.

From the above account of the internal anatomy of the spider, it will be seen that it is separated from the tribe of insects by several characters which, in most cases, are such as to entitle it to a higher rank in the scale of animal life. The most striking differences of external structure between the spiders and insects are the combination of head and chest in one mass in spiders, and the absence of the articulation or division of the integument of the body into rings or segments which characterizes the insect tribe. The number of the legs, the absence of true antennæ, the structure of the mouth and of the palpi, and the presence of none but simple eyes, are also characters which at once distinguish the spider from the true insect.

The reader may, perhaps, look in vain in this work for descriptions of some well-known animals which he has been accustomed to consider as spiders, the little scarlet "Money-spinner," for instance, and the long-legged *Opilio*, "Harvest Man," or "Shepherd Spider." These, however, although with the mites, ticks, itch-insects, harvest-bug, etc. they form part of the class *Arachnida*, and partake largely of the external characters of the spiders, differ widely in their system of respi-

ration, and in some other essential characters. The class *Arachnida* has therefore been divided into two Orders, to the first of which, *Pulmonaria*, belong the spiders and scorpions, animals breathing by means of lungs, or rather of gills; and to the latter the above-mentioned, and all the remaining English families of *Arachnida*, which breath only by tracheæ, or air-vessels.

The spider changes its skin several times before arriving at maturity, but undergoes no metamorphoses similar to those of insects. At the time of moulting there is frequently a reproduction of parts which have been broken off or injured, as legs, palpi, etc., and the further growth of these parts takes place at the period of subsequent moults.

The age to which spiders live has not yet been ascertained, but some have been known to live for four years; and the female produces several broods.

Within the egg the young are enclosed each in a membrane, or sac, which still envelopes them after the egg is hatched. They do not leave the cocoon until this membrane is cast.

## CHAPTER III.

### FAMILIES AND GENERA OF BRITISH SPIDERS.

THE ARANEIDÆ, or spiders, form one Order of the Class ARACHNIDA, and are divided according to the number of their eyes, into two Tribes,\* I. OCTONOCULINA (eyes eight) ; II. SENOCULINA (eyes six).

The tribes are divided into families, the families into genera, and the genera into species.

#### Tribe I. OCTONOCULINA.

The spiders belonging to the first five families of this tribe obtain their prey by hunting. They conceal themselves beneath stones, leaves, etc., in crevices of the earth or of the bark of trees, and pursue their victims, or spring upon them from a distance, taking them by surprise. Some species in these families pursue their prey upon, or even below the surface of the water. They are all furnished with three pairs of spinnerets.

The five remaining families weave snares which vary much in construction. They have three pairs of spinnerets, except in the family of *Ciniflonidæ*, which has four pairs.

\* As has been stated in the preceding chapter, there is a third tribe, *Binoculina*; but this, not containing any British species, has no place here.

## FAMILY I. MYGALIDÆ.

Genus 1. *Atypus*. *a* (*a*), privative ; *τυπωω* (*tyrōō*), to shape, i. e. *misshapen*.

This family has only one representative in England. Amongst the foreign species are found the largest spiders known.

## FAMILY II. LYCOSIDÆ.

Genus 1. *Lycosa*. *λυκος* (*lukos*), a wolf.

„ 2. *Dolomedes*. *δολος* (*dolos*), stratagem ; *μηδομαι* (*medomai*), to devise.

„ 3. *Hecaerge*. *έκας* (*hekas*), from afar ; *εργον* (*ergon*), action.

„ 4. *Sphasus*. *σφαζω* (*sphazo*), to butcher.

The spiders of this family are generally found running upon the ground, or lying hidden under stones, etc. Amongst them are some spiders of partly aquatic habits, and also some of the aeronautic species, or spiders which float in the air by means of light rafts of loose silken threads. The females of the two first genera attach their cocoons to the under side of their bodies, and so carry them about.

## FAMILY III. SALTICIDÆ.

Genus 1. *Eresus*. *ερεισω* (*ereiso*), I will fix.

„ 2. *Salticus*. *Saltica* (Lat.), a leaper.

These spiders are remarkable for the velocity with which they run and leap. Their peculiarities of form also serve to distinguish them, the *Cephalothorax* usually having parallel sides, being broadly truncated in front, and large in proportion to the abdomen.

## FAMILY IV. THOMISIDÆ.

Genus 1. *Thomisus*. *θωμισω* (*thomiso*), I will bind.

Genus 2. *Philodromus*. *φιλεω* (*phileo*), to love; *δρομος* (*dromos*), running.

„ 3. *Sparassus*. *σπαρασσω* (*sparasso*), to tear.

In this family, to which Walckenaer gave the name of *Laterigrades*, the legs are so jointed as to spread out straight from the body, enabling the animal to move freely sideways, forwards, and backwards, and give a crab-like appearance which is in most cases increased by the shortness and breadth of the body. These characters are less conspicuous in *Sparassus* than in the two first genera.

#### FAMILY V. DRASSIDÆ.

Genus 1. *Drassus*. *δρασσωμαι* (*drassomai*), to seize.

„ 2. *Clubiona*. *κλυω* (*kluo*), to hear (whence *κλυτος*, *renowned*); *βιαζω* (*biazo*), to do violence to.

„ 3. *Argyroneta*. *αργυρος* (*argyros*), silver; *νεω* (*neo*), to spin.

The *Drassidæ* construct silken cells in which to hide themselves, in leaves, crevices, etc. A cell, open at each end, is sometimes formed in a leaf which is doubled, and has its sides fastened together with silk threads, or on the under side of a laurel or other leaf, which is drawn into the form of an arched roof to protect the dwelling-place. The last genus of this family contains the most remarkable of all the water-spiders.

#### FAMILY VI. CINIFLONIDÆ.

Genus 1. *Ciniflo* (Lat.), a hair-curler.

„ 2. *Ergatis*. *εργατις* (*ergatis*), a workwoman.

„ 3. *Veleda*. *Veles* (Lat.), a (light-armed) soldier.

The spiders of this family have eight spinnerets, and

are furnished with a series of moveable spines on the hind legs (Fig. 5, p. 14), forming a peculiar apparatus used in the formation of their webs. These are elaborate and remarkable in construction. The spiders conceal themselves in foliage, in holes, and corners of walls, stones, etc., near which they weave their snares, which, in some cases, communicate, by slight tubes of silk, with the hiding-place.

#### FAMILY VII. AGELENIDÆ.

Genus 1. *Agelena*. *αγελεια* (*ageleia*), a forager.

„ 2. *Tegenaria*. *τεγη* (*tege*), roof; *αιρω*, to raise.

„ 3. *Cœlotes*. *κοιλη* (*coile*), a hollow.

„ 4. *Textrix* (Lat.), a spinster.\*

The webs of the *Agelenidæ* are remarkable. The snare is sometimes of great extent, very closely woven, and communicating with one or more strong silken tubes, in or near which the spider lives. These webs are constructed in bushes, grass, among fallen leaves, in holes in the earth, etc.

#### FAMILY VIII. THERIDIIDÆ.

Genus 1. *Theridion*. *θηρα* (*thera*), prey; *ειδω* (*eido*), to see.

„ 2. *Pholcus*. *φολκος* (*pholkos*), one who squints.

These spiders form snares composed of very fine threads crossing each other in all directions, forming a fine, irregular, light mass of web. The snares are woven on bushes, at the tips of branches, in nooks and crannies of buildings, etc.

\* May this have been intended for *tector*, a plasterer? See the habit of the genus.

## FAMILY IX. LINYPHIIDÆ.

- Genus 1. *Linyphia*. λινον (*linon*), thread; ὑφαίνω (*uphaino*), to weave.
- „ 2. *Neriëne*. νευρίς (*neuris*), cord or thread; ἐνη (*ene*), —?
- „ 3. *Walckenaëra*. (After M. Walckenaer, an arachnologist).
- „ 4. *Pachygnatha*. παχυσ (*pachus*), thick; γναθος (*gnathos*), jaw.

The snares of the *Linyphiidæ* usually consist of a fine horizontal sheet of web, stretched between branches or in other convenient situations, and sometimes steadied by fine lines attached to its under surface. The spider may commonly be seen clinging to the under side of the web with its back downwards. Some of the spiders contained in the genus *Walckenaëra* present very remarkable modifications of form.

## FAMILY X. EPEIRIDÆ.

- Genus 1. *Epeira*, —?
- „ 2. *Tetragnatha*. τετρα (*tetra*), four; γναθος (*gnathos*), jaw.

To this family belong those spiders whose beautiful webs are formed by precise geometrical rule. They consist of lines radiating from a centre, and connected at regular intervals by a thread, which forms a spiral line from the centre to the circumference of the snare.

## Tribe II. SENOCULINA.

## FAMILY I. DYSDERIDÆ.

- Genus 1. *Dysdera*. δυς (*dus*), difficult; δηρις (*deris*), combat.



Genus 2. *Segestria*. *Segestre* (Lat.), mat.

„ 3. *Schœnobates*. *σχοινος* (*skoinos*), rope; *βатеω* (*bateo*), to tread, i. e. a rope-dancer.

„ 4. *Oonops*. *ων* (*ōn*), egg; *οψ* (*ops*), eye, i. e. oval-eyed.

These spiders hunt their prey. They construct dwelling-places in the form of silken cells and tubes, under stones, in cracks in rocks, in the bark of trees, etc.

## FAMILY II. SCYTODIDÆ.

Genus 1. *Scytodes*. *σκυτος* (*scutos*), a hide-shield (which usually had a curved surface, prominent in the middle).

The *Scytodes* form a slight and irregular web in houses and in bushes. The female holds her cocoon, and carries it about with her, but does not attach it to herself after the manner of the *Lycosidæ*.

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This work being of a popular rather than of a scientific character, it has been thought allowable, in order to avoid repetition, and to facilitate the identification of species, to use as generic characters such specific characters as are common to all the known British species. This plan, although unscientific in its nature, and liable to be disturbed by the discovery of new species, has therefore been adopted. With the same view the genera have occasionally been subdivided by characters, unimportant in themselves, but which serve to narrow the field in which any given species is to be sought.

## CHAPTER IV.

## ON COLLECTING SPIDERS.

A FEW remarks on collecting and preserving spiders may be of service to beginners.

The first difficulty to be overcome is that of catching the spiders, which is greater than might be expected, yet which rapidly diminishes with a little practice and careful observation of the habits of the animal. For instance, if a spider be observed lying in wait upon some part of its snare in the recesses of a thick bush, the chance of success in catching it depends greatly upon our knowing whether it is likely suddenly to fall down at the approach of the hand, or to run swiftly in the direction of its hiding-place. Thus, every spider *missed* should be a help towards catching the next individual of the same species which may be met with.

We will take the *Agelena labyrinthica* as an example of the necessity for observation. This spider may be seen watching at the entrance of its silken tunnel,—may be snatched at by the most rapid hand, and will inevitably be missed if the collector hopes to seize it there; but let him watch, and he will find that the spider retreats into the tube on the approach of danger, or escapes through it, but never returns to the front entrance.

Therefore a sudden grasp, in which the fingers loosely surround the whole nest and close the opening at the further end of the tube, will almost certainly be successful.

Different modes of capturing spiders are in use. Some arachnologists carry a small wide-mouthed bottle of spirit, into which they at once put all spiders caught. This is convenient in some respects, but is open to several objections.

Most spiders may, with practice, be caught in pill-boxes; and the beginner is advised to set about his task in the following manner. Let him start with a pocketful of empty pill-boxes, a pencil, and a card, on one side, and an empty pocket to receive filled pill-boxes on the other. Probably he will see several cobwebs before he sees one spider. Let him take up his station before one of these, and determine to find its inhabitant. This may be a *Linyphia*, motionless on the under side of his horizontal sheet of web; he is caught by an upward swoop of the pill-box, the web itself covering the mouth until the lid can be put on. It may be a *Theridion*, sheltered in a little tent, which is hidden in some obscure corner, or which hangs inconspicuous in the most conspicuous part of the snare; when this is found, the tent, spider, and cocoon will all be easily taken at once. It may be an *Epeira*—the web will instantly tell of that family. There he is motionless in the middle of his beautiful web, or busy with some newly-caught victim, or lying hidden almost beyond all hope of finding him;\* but touch one thread of his web, gently, with a feather or a slender grass-blossom, and there is a chance of his

\* The hiding-place may, in many cases, be easily found by following a clue which leads thither from the centre of the web. This is either

darting forward, and at least betraying the place of his concealment. Out of that place, when found, it is difficult to take him; but hold the pill-box beneath it, frighten the spider with finger or grass-stalk, and he probably drops into it.

Before attempting the capture of a spider, the beginner should carefully observe the character of the snare; and when the spider is in the box, should note upon the lid whatever he has remarked. If the web was a geometrical one, he should note whether it was placed horizontally, obliquely, or vertically; "geo. hor." is soon written, and will be a great help when he examines the contents of his pill-boxes, and, knowing by the "geo." that the spider must be an *Epeira* (or *Tetragnatha*), finds the position of the web to be a character. So if the spider be of the *Linyphiidae*, and stand inverted under a horizontal web, "inv. hor." will be sufficient to remind him of the fact. Any remarkable circumstance should be thus briefly noted. This is one reason for preferring the use of the pill-box to that of the bottle, where the specimens must be mixed indiscriminately. Another is, that the nest and cocoon may frequently be enclosed with the spider to which they belong. A third advantage of the pill-box plan is that it enables the student to examine the animal alive, in its natural position and with its characteristic movements. This may readily be done by having at hand, when the boxes are to be opened, the lid of one of the common glass-topped pill-boxes, which is placed over the spider when it runs out, and under which it may be observed at leisure.

inclined in a direction contrary to that of the plane of the web (sometimes drawing the latter into somewhat of a funnel-shape), or is a single radius of the web, not connected by the spiral thread with those on either side.

In the case of a spider with obscure markings, these may be brightened and made conspicuous for examination by dropping the animal into spirit, which is one manner of killing it; but a more rapid, and indeed an instantaneous way is to drop it into boiling water.

The examination finished, the spider may be conveniently preserved in a homœopathic tube filled with spirit or with turpentine, and labelled or numbered; and, especially in the case of unnamed specimens, a note should be kept of all circumstances, the form of web, season of capture, etc.

It is said that the spirit which injures the colour of the spiders the least is whisky, but turpentine has been used and found satisfactory.

When the cocoon has been found with the spider (and it should always be looked for near the female), it also should be put into the tube when this is practicable. If the young are hatched, a few specimens should be preserved with the mother. If there be a nest or a cocoon unfit for the tube, it should be preserved in a pill-box, bearing a number or label correspondent to that on the tube.

The collection can be conveniently arranged in a box, containing two or more inverted trays, with round holes cut in them of a size to allow the tubes to pass through as far as to their curved edge or mouth. The sides of each tray should measure a little more in depth than the height of the tube and cork; and the horizontal perforated part should be so fixed that the sides may rise sufficiently above it to protect the corks from the pressure of any tray placed above it. It will make reference to the specimens very easy if their names be written on the tops of the corks.

The student is advised not to limit his catching apparatus to pill-boxes. The little open-mouthed bottles of spirit, spoken of above, may be carried without trouble attached to the waist by a string, to which also hangs a camel-hair brush. This, wetted in the spirit, is useful in taking up the smaller spiders running on the ground, or sheltering themselves in holes and crevices, and which otherwise it is almost impossible to capture. It is well to have the cork of the bottle attached by a string, or the collector will be looking for the cork when he ought to be looking for the spiders.

The card will be found useful to slip under a pill-box when placed over a spider on the ground or on a wall or paling.

Many specimens may be obtained by dragging a common insect-net over the grass, or by holding it beneath trees and bushes whilst they are beaten.

## Tribe I. OCTONOCULINA.

## FAMILY I. MYGALIDÆ.

## Genus I. ATYPUS.

*Eyes.* Four large and four small, placed near together on a projection of the cephalothorax. The four large form a crescent above the face. Close behind each end-eye of the crescent are two small eyes forming with it a triangle. The middle eyes are the largest of all. (Plate I. fig. 1.)

*Falces.* Large; projecting greatly; rounded above; toothed. Near the base of the fang are three small projections.

*Maxillæ.* Long; wide at the insertion of the palpi, pointed at the tip; spreading.

*Legs.* Short and thick. Order of length 4 1 2 3.\*

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Cephalothorax.* Very large; broader before than behind, cut square in front.

*Breastplate.* Semicircular.

*Abdomen.* Egg-shaped, rather broader behind than before.

\* *I. e.* the fourth pair is the longest, the first pair the next in length, and so on.

*Spinnerets.* The upper pair long and projecting.

*The female is less than  $\frac{1}{2}$  inch long; the male smaller.*

1. *Atypus Sulzeri.* (Plate III. fig. 1 ♀; Plate I. fig. 1, eyes.) The spider is glossy. The cephalothorax of the female is reddish-brown, the abdomen darker and slightly hairy. The male is much darker. A smooth oval space of leathery substance occurs on the front half of the upper side of the abdomen in the male. This spider is easily distinguished by the great size of the cephalothorax and falcæ, together with the position of the latter.

The *Atypus* forms a tunnel in damp earth, which it lines with a tube of close-textured white silk. At the end of this gallery, which runs in a horizontal direction at first but dips down afterwards, the spider remains crouching, waiting for its prey. The female there deposits her cocoon, which is guarded from the dampness of the earth by being placed on a cushion formed of silky flock and the fibres of plants. The *Atypus* feigns death when taken.

## FAMILY II. LYCOSIDÆ.

### Genus I. LYCOSA.

*Eyes.* Four large and four small, in three distinct rows. The four smaller eyes form a line or crescent above the face. The four larger form a nearly square figure behind them, those of the foremost pair being the largest. (Plate I. fig. 2 d, *L. andrenivora*.)

*Falcæ.* Toothed on the inner edge of the groove which receives the fang.

*Maxillæ.* Enlarged towards the tip, the outer side of which is rounded.



Fig. 8.  
Maxillæ and lip of  
*L. campestris*.



*Lip.* Nearly equal in length and in breadth, broadest at base.

*Legs.* Strong and hairy. Order of length 4 1 2 3.

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Palpal claw* of female toothed.

*Cephalothorax.* Rather flattened; somewhat contracted towards the face.

*Breastplate.* A short oval, nearly round \*; or heart-shaped \*\*.

*Abdomen.* Egg-shaped, slightly overhanging the cephalothorax; usually larger than the cephalothorax, and broadest behind, in the female; smaller and more slender in proportion to this in the male.

*The length of the females is from a little under  $\frac{3}{4}$  inch to  $\frac{1}{2}$  inch. The male is usually smaller and darker.*

The *Lycosæ*, or wolf spiders, lead an entirely vagabond life, constructing no snares, and carrying their eggs, and afterwards their young, about their bodies. They are extremely rapid in their movements and eager in the pursuit of their prey, waiting only to kill one victim before darting upon another. They will sometimes allow themselves to be carried into the air by a large fly when attacking it, rather than relinquish their hold. The female *Lycosa* will fight boldly for the protection of her cocoon, and it is said that if deprived of it she will conceal herself and die. She hatches two broods in the year, in spring and autumn, and has been known to hatch three. The eggs are not adherent to each other in the cocoon, which is constructed in a remarkable manner. The two halves of the silken case are strong and compact in texture, and at their suture is a band of much



Fig. 9.  
Cocoon of  
*L. Cambrica.*

slighter substance. This gives way sufficiently to allow of the growth of the young after their escape from the egg and before they are disengaged each from its membranous envelope, and, in due time, it is at this weakest part that the young escape. Amongst snare-making spiders, the young commence weaving immediately after leaving the egg; but the young *Lycosæ*, requiring no snares, and being incapable of protecting themselves, remain for about a fortnight with the mother, giving rise formerly to a belief that they derived their nourishment from her body. The *Lycosæ* pass the winter under stones, etc., or in holes in the earth. Some species hunt their prey on the water.

\* *Breastplate oval.*

\* 1. *Lycosa agretica*. The two end-eyes of the front row are rather smaller than the two middle. The maxillæ are cut slantwise at the end on the side next the lip.

This spider is dark-brown, paler when young. The shield has a slit-like dent near the base, is palest down the middle and on the sides, and has two parallel longish dark spots in the middle near the face, and convergent faint lines in the middle. The margins are dark. The abdomen is rather paler than the shield, and has a dark pattern on the upper side down the middle, outside which are minute spots of lighter colour and black. In the female the dark mark is surrounded by an irregular dark band, with an interval of the ground-colour between. The abdomen is very hairy. There are a few spots on the sides of and below the abdomen, and the breastplate is glossy and reddish-brown. The gills are yellowish.

The legs are hairy and spinous, and rather paler than the body; the thighs are faintly marked with dark rings, and in the male the fifth and sixth joints of the front pair of legs are very dark. The palpi of the female are darkest at the tip. In the male they are dark reddish-brown.

The female is less than  $\frac{1}{2}$  inch in length.

*Lycosa agretica* is found on heaths and pastures. In June the female forms her cocoon, and digs, or finds a hole in the earth, in which she hides herself with it. The cocoon is round, white, and  $\frac{1}{4}$  inch in diameter. The eggs are pale yellow.

\* 2. *Lycosa campestris*. The two inner eyes of the front row are rather larger than the two outer. The maxillæ are cut slantwise at the end on the side next the lip, and curve towards each other (see Fig. 8, page 35).

The shield has a slit-like dent near the base; it is greenish- or inclining to reddish-brown. A light band broadest at the fore part, runs down the middle, and has on it two parallel longish spots. There is a pale line on each side, and faint pale lines radiate from the middle. The abdomen is very hairy. It is greenish-brown above, minutely speckled, and has a broad strip of pale colour, with a dark outline reaching from the base to about the middle. The hinder part has two rows of alternate light and dark spots. The under side is yellow, and the breastplate yellowish-brown.

The legs are hairy and spinous, pale yellowish or greenish-brown, sometimes faintly ringed on the thigh. In the male the three last joints of the fore legs are very dark. The palpi are pale, reddish-brown at the tip in the female, and very dark in the male.

The female is a little less than  $\frac{1}{2}$  inch.

The female forms a round cocoon in June, about  $\frac{1}{2}$  inch in diameter, containing yellowish eggs, which show their round form on the surface of the cocoon.

**\*\* *Breastplate heart-shaped.***

**\*\* 3. *Lycosa andrenivora*.** (Eyes, Plate I. fig. 2.) The two inner eyes of the front row are rather larger than the two outer. The lip is a little longer than its breadth. The maxillæ are cut slantwise at the end, on the side next the lip, and curve toward each other. The shield has a slit-like dent near the base, and convergent wrinkles on the sides.

The general colour is brown. The shield is hairy, palest down the middle and on the sides. The abdomen has three small tufts of pale hairs in front, and is palest down the middle, on which part is a dark angular pattern, forked behind. In the female this reaches about halfway to the spinnerets, and is succeeded by a less distinct pattern of black angular lines. The male is paler than the female, being more nearly grey than brown, and the dark pattern on the abdomen reaches nearly to the spinnerets, forming a series of overlapping triangles, with their apices towards the base of the abdomen. The sides are mottled, and the under part is pale-brown. The breastplate is dark. The legs and female palpi are marked with dark rings, and are of a reddish-brown colour.

The legs of the male are yellowish-grey, except the ends of the fore legs, which are dark. The palpi are blackish or reddish-black.

The female is  $\frac{1}{2}$  inch long.

*Lycosa andrenivora* is found on commons and in fields.

**\*\* 4. *Lycosa rapax*.** This spider is hairy, and its general colour is brown. The shield is indented and slightly wrinkled. It is palest in the middle and at the sides. The edges are dark. On the abdomen is a long, narrow uneven strip of dark colour, enclosed in a pale band with a dark outer edge. This mark is rounded at the fore part and pointed behind, reaching nearly to the spinnerets. In the female the dark edge breaks at the hinder end into spots which, running into others, form oblique lines on the sides. Sometimes there are faint whitish curved lines on the hind part. On the under side of the abdomen are three rather faint dark bands running lengthwise, and the breastplate is dark and glossy.

The legs of the female have darkish spots and streaks; the upper joints of the first and second pairs of the male, and the palpi, are dark.

The female is  $\frac{3}{8}$  inch long.

*Lycosa rapax* is found in woods and fields, and on commons. The cocoon is round, of a pale brownish colour, and about  $\frac{1}{4}$  inch in diameter. The eggs are pale yellow.

**\*\* 5. *Lycosa herbigrada*.** The two outer eyes of the front row are rather larger than the two inner. The maxillæ are short.

This spider is of a light brown colour, covered with a dark pattern. The shield, which is dented, is reddish-brown with dark margins. It is dark at the eyes, whence two irregular pointed dark lines run on each side of the middle. The paler parts of the shield are hairy. The abdomen is hairy, and has dark markings, which enclose patches of the paler ground-colour. The sides of the abdomen are pale with dark spots, and the under

part is pale. The breastplate is hairy, and is reddish-brown with a dark toothed line surrounding the middle space, and spots upon the edges.

The legs are hairy and spinous, light-brown, streaked, spotted, and ringed. The palpal claw of the female is toothed.

The female is rather less than  $\frac{1}{2}$  inch.

**\*\* 6. *Lycosa allodroma*.** The two inner eyes of the front row are larger than the two outer. The maxillæ are curved, and, like the falces, are fringed with pale-red hairs on the inner side. The cephalothorax is large. The shield is keeled down the middle.

The female is greenish-brown, the abdomen being darker than the shield; the male is a paler brown and is more clearly marked, and the abdomen is rather lighter than the shield. The shield is very hairy, darkest on the keel, and has an indistinct pale spot beside or behind each of the four large eyes. The abdomen is hairy, and greyish olive-brown. Reaching about halfway down it is a patch of paler colour, with serrated edges and dividing into three at the hinder end, and succeeded by pale curved transverse lines. The abdomen is yellowish-brown below, and the breastplate dark and covered with whitish hairs.

The legs are yellowish-brown, hairy, spinous, and ringed.

The female is less than  $\frac{3}{4}$  inch long.

Found in Wales.

**\*\* 7. *Lycosa picta*.** (Plate III. fig. 2 ♂.) The two inner eyes of the front row are rather larger than the two outer. The maxillæ are a little curved towards each other.

The shield is covered with pale hairs. It is red-

dish-brown, with dark edges and two irregular dark stripes beginning in a point at the outer side of the eyes and reaching to the base. The abdomen is hairy, and rather paler and colder in colour than the shield. In the female, the fore part has three short divergent dark straps united in front, and the middle one of which is cleft behind. Behind these is a large cream-coloured patch ending in a sharp point, on each side of which is a short transverse strap of dark colour bearing two red-coloured spots. These are followed by a pair of large spots of the same colour with dark outlines, and these by a double row of small spots, connected in pairs by dark curved transverse lines. The markings of the male are similar in character, and there is no danger of mistaking this spider for any other of the genus. The abdomen is cream-coloured below, and the breastplate blackish.

The legs and palpi are hairy and spinous, pale reddish-brown with dark rings.

The female is  $\frac{3}{8}$  inch long. Found on the seacoast.

\*\* 8. *Lycosa saccata* (Plate III. fig. 3 ♀). The colour is brown. The male is of a rather darker and colder colour than the female. The shield is dark, pale at the edges, and has a paler band down the middle, which is suddenly widened at the head and pointed behind. The abdomen is hairy, and on the fore part is a black mark, within which are three small tufts of pale hairs. It is yellowish-brown above, and "a short (longitudinal) yellowish-brown band, obscurely defined by a blackish border, succeeds to this mark, and a series of irregular black and pale yellowish-brown spots, disposed alternately, occurs on each side of the medial line, both of which converge to the spinners; in the interval between these series there are a few minute black spots;" the

sides of the abdomen are pale, with dark mottling. The abdomen is pale below, the breastplate very dark, with pale hairs.

The legs are hairy, spinous, and ringed, less distinctly in the male than in the female. In the female the palpi are reddish-brown; in the male they are black.

The female is  $\frac{1}{3}$  inch long.

*Lycosa saccata* is a very common spider. The cocoon is flattened, and of a pale-brownish colour, with a paler ring round it. It is  $\frac{1}{2}$  inch in diameter.

**\*\* 9. *Lycosa lugubris*.** The female of *L. lugubris* resembles that of the preceding species, except in the following particulars:—The pale band in the middle of the shield is widest at the eyes, and narrows gradually to the base, and there is a pale line above the edges. On the abdomen, after the black mark and tufts of hair, there is “in the medial line of the anterior part a short yellowish-brown band, obscurely defined by a black border: it is succeeded by several indistinct triangular black spots, and on each side of them there is a series of black and pale yellowish-brown spots disposed alternately, both of which converge to the spinners.”

The male is much smaller, and is nearly black. A white band runs down the middle of the shield. The abdomen has many white hairs above, and is brownish below. The upper parts of the legs are blackish, and the lower pale.

The female is nearly  $\frac{1}{3}$  inch long.

*Lycosa lugubris* is found in woods. The cocoon is flattened, and of a greenish- or yellowish-brown colour, with a whitish ring round it. It is  $\frac{1}{2}$  inch in diameter.

**\*\* 10. *Lycosa obscura*.** The colour of this spider is dark-brown; the cephalothorax and the abdomen rather



differing in hue. The shield is reddish-brown in the middle and on the sides. The abdomen is hairy, and has three very small tufts of pale hairs on the fore part. It is dark-brown above, with a lighter band edged with an angular dark line, reaching about one-third of its length from the fore part. Behind this is a row of faint dark spots, and on each side are dark and small pale spots converging to the end of the abdomen. The under side of the abdomen is pale, and the breastplate is dark-brown, with a few white hairs.

The legs are not very dark, and are marked with rings. The female, when old, becomes darker in colour, and loses nearly all sign of pattern.

The female is rather less than  $\frac{1}{4}$  inch.

*Lycosa obscura* is found on heaths, in fields, etc. The cocoon is formed in the autumn, and is somewhat similar to that of the preceding species, but is rather smaller.

\*\* 11. *Lycosa exigua*. The two inner eyes of the front row are larger than the two outer. The cephalothorax is large.

This spider is hairy, and of a dark-brown colour. The shield has a pale streak down the middle and over each side. The abdomen has three small tufts of hairs on the fore part. On the abdomen in the female a dark band extends from base to tip, on which are darker markings, and down each side of the hinder half of which is a row of alternate black and small white spots. In the male the dark band is very short, the rows of small alternate black and white spots commencing where it ceases. The sides of the abdomen are yellowish-brown, with dark spots. The under side is palish, and the gills are dark. The breastplate is nearly black, and covered with whitish hairs.

The legs and palpi are hairy and spinous, rather pale, and spotted and streaked, especially on the thighs.

The female is  $\frac{1}{4}$  inch long.

Found on heaths, in fields, etc. Common. The cocoon is formed in June, and is flattened, yellowish, or greenish-brown, with a whitish ring, and is  $\frac{1}{7}$  inch in diameter. This is one of the spiders which sometimes float in the air by means of their light silken threads.

**\*\* 12. *Lycosa fluviatilis*.** The colour of the female is dark yellowish-grey; the male is still darker, and much smaller than the female. The shield is lightest in the middle and at the edges; in the male a line of pale hairs run down the middle and the edges. The abdomen is hairy, and has three small tufts of hairs on the fore part, in front of which is a large black spot. Down the middle is an undefined dark band, on which, in the female, after the black spot, is a strap of pale colour about a third of the length of the abdomen, succeeded by a series of zebra markings, with small white spots or faint whitish lines on them. The gills are dark. The abdomen is palest below, and the breastplate is very dark, with a few whitish hairs.

The legs and palpi are hairy and spinous, palish and faintly ringed; the ends of the first pair being blackish in the male.

The female is rather more than  $\frac{1}{4}$  inch; the male is much smaller.

*Lycosa fluviatilis* is found on the banks of rivers. The cocoon is formed in June; it is of strong texture, with a slighter ring round it; it is flattened, of a dull-green or yellowish-brown colour and  $\frac{1}{7}$  inch in diameter.

**\*\* 13. *Lycosa Cambrica*.** The two outer eyes of the front row are rather larger than the two inner. The

maxillæ are strong, curved towards each other, cut aslant at the end on the side next the lip, and, with the falces, have a fringe of hairs on the inner surface.



Fig. 10.  
Maxillæ of  
*L. Cambrica*.

The spider is hairy. The shield is large, glossy, and blackish, covered with pale hairs, which are thick upon the face, and form spots on the sides and behind. The abdomen is light-brown, darker down the middle, on which is a pattern consisting of, first, a dark-edged strip of pale colour extending about one-third of the length of the abdomen, and ending in a point; from this point a line of small white spots reaches to the spinnerets, with a line of black and white spots on each side converging to the same place. Black angular lines connect the black spots in pairs, and there are irregular white spots on each side of the pale strip. The sides are variously mottled. The abdomen is yellowish-brown below, and the breastplate is dark, covered with long black hairs and with short pale ones.

The legs and palpi of the female are ringed; part of the thigh of the fore legs in the male is black.

The female is rather less than  $\frac{1}{2}$  inch long.

The cocoon of *Lycosa Cambrica* (see Fig. 9, page 36) is round and white, and  $\frac{1}{3}$  inch in diameter, and is found in July and August. Found in marshy places.

**\*\* 14. *Lycosa latitans*.** The two inner eyes of the front row are larger than the two outer.

The colour of this little spider is dark-brown. The cephalothorax is glossy, and much broader at the base than towards the face. It is palest down the middle, and has pale hairs on the sides. The abdomen is hairy, and has an olive tinge. There is a short faint line of pale

colour in the forepart, and there are two lines of small white spots which run down its length. The sides and lower part of the abdomen are covered with white hairs. The breastplate is reddish-brown, darkest at the edges.

The legs and palpi are yellowish-brown, with dark rings; the three first pairs of legs are nearly equal in length.

The female is less than  $\frac{1}{4}$  inch.

*L. latitans* is found in damp places, among moss, and under stones. The cocoon is round, white, and  $\frac{1}{8}$  inch in diameter, and is found in May and June.

\*\* 15. *Lycosa piratica* (Plate III. fig. 4 ♀). The two inner eyes of the front row are larger than the two outer.

The spider is of a yellowish-brown colour. The shield is glossy, darkest towards the sides, and has a dark line forked at the eyes in the middle. The edges have white hairs. The abdomen is hairy, with two white lines starting from the base, and converging to a point at a little less than half its length, beyond which are two lines of white spots, forming a similar figure, and converging to the spinnerets; the sides are speckled with white. The breastplate and under side of the abdomen are yellowish-brown.

The legs are greenish-brown, with reddish feet. The thighs are palest, sometimes faintly ringed.

The female is a little less than  $\frac{1}{8}$  inch.

*Lycosa piratica* is found in marshy places and at the edges of pools. It pursues its prey on the surface of the water, and dives for refuge from danger; entangling (like the *Argyroneta*) a supply of air in the hairs with which its abdomen is covered, sufficient to enable it to remain in the water for some time. The cocoon is white and round, and  $\frac{1}{8}$  inch in diameter. It is found in June.

**\*\* 16. *Lycosa piscatoria*.** The two inner eyes of the front row are larger than the two outer.

The shield is glossy, rather hairy, wrinkled at the sides and indented in the middle near the base. It is yellowish-brown, with a broad, dark-olive band pointed at the end next the base, down each side of the middle, which is pale and has a dark V mark behind the eyes. The abdomen is brown, with a long oval reddish-brown patch, growing narrower towards the end. This has an angular black margin, on either side of which is a line of white spots, and in the middle of the red patch is a loop of black drawn to a point at the hinder end. The under side of the abdomen is pale-brown. The breastplate is dark with a pale line down the middle.

The legs and the female palpi are light-brown, hairy, and spinous. The legs have dark rings.

The female is rather more than  $\frac{1}{4}$  inch.

In habit and economy the *Lycosa piscatoria* greatly resembles *L. piratica*.

## Genus II. DOLOMEDES.

*Eyes.* Four large and four small, in two crescents, with their convex side towards the face. The four smaller eyes form a small crescent above the face, and behind them the four large eyes compose a much larger crescent, the two largest eyes being in middle. (Plate I. fig. 3, *D. mirabilis*.)

*Falces.* Toothed on one or both edges of the groove which receives the fang when at rest.

*Marillæ.* Rather rounded at the end, and larger there than at the base.

*Lip.* Nearly equal in length and in breadth.

*Legs.* Long, strong, hairy, and spinous. The fourth pair longest and the third shortest.

*Claws of feet.* Three.

*Palpal claw* of female toothed.

*Cephalothorax.* Rather flattened; somewhat contracted towards the face; having a slit-like dent in the middle near the base.

*Breastplate.* Heart-shaped.

*Abdomen.* Long and tapering \*, or egg-shaped \*\*.

*Length of the female from near 1 inch to  $\frac{1}{10}$ .* The male smaller.

\* *Abdomen long and tapering.*

\* 1. *Dolomedes mirabilis* (Plate III. fig. 5 ♀; eyes, Plate I. fig. 3; cephalothorax, maxillæ, etc., figs. 1, p. 11, 4, p. 13). The two inner eyes of the front crescent are the smallest. The falces are toothed on both edges. (See fig. 4. p. 13.)

This spider varies much in colour; it is brown and hairy. The shield is, on the fore part, triangular and reddish. Its sides are pale, and a pale line runs down the centre from the eyes to the base, and the two lower sides of the triangle are defined by a pale line springing from that in the middle. The abdomen has faint darkish markings down the middle, and a pale waving line between two darker lines runs from the base, round its sides, to a point near the spinnerets. When old, the female changes to a dark-grey colour. The abdomen is pale below, and spotted with lighter colour; the breastplate is dark, with a light stripe down the middle, and is clothed with pale hairs.

The legs are pale, the order of length 4 2 1 3. The foot-claws are all toothed.

The female is  $\frac{1}{2}$  inch long. The male smaller.

*Dolomedes mirabilis* is found in well-wooded parts of the country. The habits of this spider closely resemble those of the *Lycosæ* up to a certain period. The *Dolomedes* hunts for prey, running rapidly upon the ground, among grass, etc., and having no habitation except some hole or curved leaf, or under side of a stone, where it rests at night or in wintry weather. The female carries her cocoon (which is large, globular, and of a dull yellowish colour) attached to her body, in all her hunting expeditions, until the time approaches for the hatching of the eggs, when she weaves a large sheet of close fine silk upon grasses or the branches of bushes, forming a dome, of which these supply the rafters. In this she then remains with her young until they are old enough to disperse, quitting them only for the purpose of procuring food.

**\*\* Abdomen egg-shaped.**

**\*\* 2. *Dolomedes ornatus*.** The two inner eyes of the front crescent are rather larger than the two outer, which are on small tubercles. The two inner eyes of the hind crescent are the largest of all, and the two outer are on tubercles. They are all on black spots, and there is a black spot under each outside eye of the front row. The falcæ have few teeth, on one edge only of the groove; the maxillæ lean a little towards the lip.

This spider is of a yellowish colour. Down the shield run two dark lines, each beginning in a point near one of the hinder eyes, growing broader and swelling out as it proceeds, and the two approaching each other towards the base. The colour between these is reddish and the edges of the shield are black. The abdomen has four short straps of dark colour placed side by side

on the fore part. They are succeeded by three large spots in a transverse row, and these are followed by a series of transverse bars, which continues to the end of the abdomen. The sides of the abdomen are brownish. On the under side of the abdomen are two dark bands, meeting at the spinnerets. The breastplate is pale, with dark sides.

The legs are yellowish, with small black spots. The first and second pairs are of the same length. The two upper foot-claws are toothed, the lower plain.

The female is  $\frac{1}{16}$  inch long.

**\*\* 3. *Dolomedes fimbriatus*.** The two inner eyes of the front row are larger than the two outer. The two inner eyes of the hind crescent are the largest of all, and the two outer are on tubercles. The falces have one row of teeth. The shield is wrinkled on the sides.

This large spider is hairy, and of a dark-brown colour striped with yellow. A band of yellowish colour down each side of the shield meets a similar band on each side of the abdomen. The latter converge, and are pointed near the spinnerets. On the abdomen, between these bands, are sometimes two faint longitudinal rows of whitish spots. The under side of the abdomen is yellowish-brown; the breastplate reddish-brown.

The legs and palpi of the adult female are reddish-brown, palest below. In the young they are of a greenish colour. The two upper foot-claws are toothed, the lower plain.

The female is more than  $\frac{3}{4}$  of an inch long. The male is smaller.

This spider is common in the fens of Cambridgeshire, and resembles *Lycosa piratica* in its aquatic habits. Its cocoon is round, of a brown colour, and more than



$\frac{1}{4}$  inch in diameter. The female carries it under her body.

### Genus III. HECAERGE.

*Eyes.* Four large and four small. The four small form a small crescent next the face, the four large form a larger crescent behind them. The crescents have their convex side towards the face. (Plate I. fig. 4.)

*Falces.* The inner edge of the groove toothed.

*Maxillæ.* Rounded at the end; large at the insertion of the palpi; leaning towards the lip, and convex on the under side.

*Lip.* Inclined to triangular, but cut abruptly off at the tip.

*Legs.* Strong. Order of length 4 1 2 3.

*Claws of feet.* Two, toothed.

*Palpal claw* of female toothed.

*Cephalothorax.* Oval, broadest behind and somewhat pointed towards the face.

*Breastplate.* Heart-shaped.

*Abdomen.* Egg-shaped; upper side convex; broader behind than before; and overhanging the cephalothorax.

1. *Hecaerge spinimana.* (Plate III. fig. 6 ♀; eyes, Plate I. fig. 4). The two inner eyes of the front row are larger than the two outer. There is a dark transverse line below this crescent, and a few white hairs are in the middle between the crescents. The teeth of the falces are few and small, and they have a long dark spot in front.

The spider is pale-brown and hairy. The shield is streaked lengthwise; the abdomen is spotted with darkish brown, and on its fore part are three small tufts of white hairs. The abdomen is spotted on the sides and

below with black. The breastplate has a greenish shade. On it are three dark spots, one on each side and one behind, and sometimes there is a very small one opposite the lip.

The legs have strong spines, are streaked above, and spotted below with dark colour. The ends of the legs are dark, and the first and second pairs have a row of long moveable spines beneath. The foot-claws are long, with three small teeth on each, and there is a hairy pad or brush below them.

The female is  $\frac{1}{4}$  inch long. The male less.

*Hecaërge spinimana* is an active spider, and is found chiefly in woods. The cocoon is flattened in shape, white, and rather less than the third of an inch in diameter, and is attached by the mother to the lower side of a stone.

### Genus III. SPHASUS.

*Eyes.* Two large and six small; placed in three rows. One pair of small eyes is over the face; behind these is a crescent formed of four eyes (the convex side in front), and behind the crescent is another pair of small eyes. The two large eyes are those forming the middle pair of the crescent. (Plate I. fig. 5.)

*Falces.* Not toothed?

*Maxillæ.* Long; rounded towards the tip; large at the insertion of the palpi.

*Lip.* Broader towards the tip than at the base.

*Legs.* Long and thin. Hairy and spinous. Order of length, 1 2 4 3.

*Claws of feet.* Three. The two upper toothed; the lower much curved and plain.

*Palpal claw of female.* Toothed.

*Cephalothorax.* Oval; broadest behind. Cut square at the face, bearing a slit-like dent near the base.

*Breastplate.* Heart-shaped.

*Abdomen.* Oval; tapering to the end.

*The female is  $\frac{1}{4}$  in.*

1. *Sphasus lineatus*. (Plate III. fig. 7 ♂; eyes, Plate I. fig. 5.) The falces have a brown streak down them.

On the face, below the eyes, are two upright brown streaks, and behind the eyes are two short light streaks. The shield is glossy and dark-brown, with a paler forked band on the hinder part, and pale edges. The abdomen is dark-brown. On the fore part is a pale spot with a dark outline, which again has a light line round it. This is succeeded by a line of pale spots, of which the terminal spot is the most conspicuous. The sides bear each three pale lines lying in different directions. The abdomen is dark-brown. The breastplate is dark-brown, with a pale line down the middle.

The legs are pale, streaked, spotted, and ringed with darker colour. The palpi of the female resemble the legs in markings.

The spider is  $\frac{1}{4}$  in. long.

The *Sphasus*, while belonging to the *Lycosidæ*, presents in its general form, etc., a kind of link between *Dolomedes* and *Philodromus*, whilst its habit of leaping on its prey gives it a resemblance to the spiders of the genus *Salticus*.

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### FAMILY III. SALTICIDÆ.

#### Genus I. ERESUS.

*Eyes.* Four are grouped closely together in front,

the hind pair being the largest of the eight. The four others are wide apart, and form a large quadrangle, which encloses this group. (Plate I. fig. 6.)

*Falces.* Short and strong.

*Maxillæ.* Long; straight; rounded at the tip; enlarged at the insertion of the palpi.

*Lip.* Long, triangular, and pointed.

*Legs.* Strong, short, and hairy.

*Cephalothorax.* About equal with the abdomen in length and breadth.

*Abdomen.* Egg-shaped.

*The female is  $\frac{1}{3}$  in. long.*

1. *Eresus cinnabarinus.* (Eyes, Plate I. fig. 6.) The shield is black, with a bright red or crimson mark on each side at the hinder parts. The abdomen is bright red or crimson above, with large black spots edged with white hairs. The breastplate is black; and the under-side of the abdomen is black, with a white spot near the end, and some red hairs over the gills.

The legs and palpi are black, ringed with white; the thighs of the three hinder pairs have red hairs.

The female is  $\frac{1}{3}$  in.; the male less.

This spider is exceedingly rare. It is not very active, but like the other *Salticidæ*, is capable of leaping. It is said to spin long threads upon bushes, which serve the purpose of a snare, although its habits are predatory.

## Genus II. SALTICUS.

*Eyes.* In three rows. Two eyes are much larger, and two much smaller than the rest. Four form a line over the face, the largest pair being in the middle; behind the lateral pair of these is the smallest pair, and

behind these is the remaining pair,—the whole forming three sides of a square. (Plate I. fig. 7, *S. scenicus*.)

*Falces*. Teeth few or none.

*Maxillæ*. Rounded and large towards the tip; enlarged at the insertion of the palpi.

*Lip*. Triangular, or somewhat oval.

*Legs*. Strong and rather short.

*Claws of feet*. Two. Toothed or plain.

*Breastplate*. Oval or heart-shaped.

*Cephalothorax*. Sides nearly parallel. Cut square at the face.

*Abdomen*. More or less egg-shaped, sometimes rather pointed behind. Overhanging the cephalothorax.

*Female from*  $\frac{1}{2}$  *inch to*  $\frac{1}{10}$ .

1. *Salticus scenicus* (Plate IV. fig. 1 ♂; eyes, Plate I. fig. 7.) The falces of the female are gibbous in front and have a few teeth; those of the male are very long, projecting, and spreading, with two teeth upon the base, and a projection near the insertion of the fang, which is very long. The lip is oval. The breastplate is oval. The abdomen egg-shaped, and slightly flattened above.



Fig. 11.  
Falces, etc., of  
*S. scenicus* ♂.

The shield slopes suddenly behind, and rather overhangs the falces in front.

This spider is black and brownish, with white zebra markings. The shield has a white border and two white spots near the hindmost eyes. The abdomen is brownish, with a curved white band on the fore part, three pairs of oblique white stripes on the sides, and a white spot at the tip. Below, the abdomen is pale. The breastplate black.

The legs are short, pale with dark rings, and there is a brush of hairs below the claws, which are toothed.

The female is  $\frac{1}{4}$  inch; the male less.

This spider is very common, and there is no difficulty in recognizing it by its general form and proportions, its zebra-like markings, and its *saltatory* motion. It runs quickly, and as easily on perpendicular as on horizontal surfaces, and in springing always secures itself by a silk line from the starting-point. The cocoons are formed in June, and are white, one or two in number, flattened, and about  $\frac{1}{8}$  inch wide. The female forms a silken cell for them in cracks of rocks, bark, etc., and may often be found with them.

2. *Salticus sparsus*. The falces are small, and minutely toothed. The lip is oval. The breastplate oval, with a slight projection on each side near the front. The abdomen is egg-shaped, rather pointed behind and slightly flattened above. The cephalothorax slopes down suddenly behind, and in front it rather overhangs the falces.

This spider is of a brownish-black colour, marked with white. The shield has sometimes a spot of pale hairs near each hinder eye. The abdomen is palest at the sides, and spotted with white near the tip. On the upper side is a pair of large white spots, rather past the middle, each followed by a series of oblique whitish streaks, to which succeeds a white spot. On the fore part are some white hairs. The abdomen is grey below, and the breastplate is dark brown.

The legs and palpi are black, with reddish-brown rings. The claws are long, toothed, and without a hair-pad. The fourth pair of legs is much longer than the rest, which are nearly equal.

The female is less than  $\frac{1}{4}$  inch.

3. *Salticus coronatus*. The falces are gibbous in front. The lip is oval. The abdomen is egg-shaped, and rather flattened above. The cephalothorax is a little broadest behind, it slopes down suddenly behind, and in front rather overhangs the falces.

The male and female vary greatly in colour. The cephalothorax is dark brown, with a broad reddish band covered with reddish and whitish hairs surrounding the part on which the eyes are placed. In the male this band sends out two points behind, and is thickly covered with pale hairs. The abdomen of the female is an olive-brown colour above, surrounded by a paler band. Down the centre runs an interrupted dark line with slanting dark streaks on each side of it. In the male a reddish or sometimes yellowish-brown band, bordered with black, and that again with pale colour, runs down the middle; and the sides of the abdomen are black. The upper side is marked with a pale, curved, transverse line, which is sometimes very obscure. Below the pale band the sides of the abdomen are darker, and the under side is yellowish-brown with a rather darker band down it. The breastplate is dark, with a few whitish hairs.

The legs of the female are pale, reddish-brown, with dark rings. In the male the thighs are black or blackish. The claws are toothed.

The female is rather more than  $\frac{1}{4}$  inch long.

4. *Salticus xanthogramma*. This spider is rare. Mr. Blackwall gives, from the Latin of Dr. Martin Lister, the following description:—"This spider is of medium size, and, for the most part of a yellowish colour. The cephalothorax is large, nearly quadrate, very flat, and broadest in front. In the relative size and arrangement

of its eyes, it resembles its congeners, and their colour is emerald-green. The abdomen is subcylindrical, and pointed at the posterior extremity. It has three conspicuous saffron-coloured streaks in the medial line of the upper part, and is whitish underneath. The male has the first pair of the legs robust, hairy, and longer than the rest, the third pair being the shortest."

5. *Salticus frontalis*. The falces are small and toothed. The lip is triangular, pointed at the tip. The breast-plate oval. The abdomen is egg-shaped, rather pointed behind. The sides of the cephalothorax are parallel; it slopes suddenly behind, and overhangs the falces.

The shield is brown, the front half and the sides are dark, the rest is light. Red hairs surround the eyes. The abdomen is very pale brown. It has three rows of fine black triangular spots run down the middle, and fine irregular streaks and spots on each side. Below, the abdomen has two rows of black spots, and the breastplate is light brown and hairy.

The legs are pale, thick, hairy, and spinous. The order of length, 4 3 1 2. The claws are slender and plain. In the male the fore legs are very thick and black, except at the feet.

The female is  $\frac{1}{8}$  inch long.

6. *Salticus obscurus*. The female is not yet described. The breastplate is oval. The abdomen is a short egg-shape. The cephalothorax is about equal in breadth before and behind. This spider is very broad; in colour it is dark brown, with four faintly lighter patches on the shield, and on the fore part of the abdomen are two short inconspicuous lines of white hairs. The legs and palpi are paler than the rest of the spider, especially towards the ends.



The fore legs are unusually strong. The order of length, 4 1 2 3. The claws are plain.

The male is  $\frac{1}{8}$  inch.

7. *Salticus distinctus*. Teeth of the falces small. The maxillæ large at the tip. The lip triangular and rather pointed. The breastplate oval. The abdomen egg-shaped, rather pointed behind. The cephalothorax is a little broader before than behind, where it slopes down suddenly, and in front it rather overhangs the falces.

The shield is dark brown, with lines of whitish hairs at the sides and in the middle. The abdomen is light brown, with a dark brown pattern down it, on which is laid a second pattern of curved lines. It is clothed with hairs of several colours. Near the spinnerets is a spot composed of whitish hairs, of which there are also a few on the fore part of the abdomen. On the lower side of the abdomen is a broad longitudinal stripe of brown colour. The two upper spinnerets are dark brown, the others reddish-brown. The breastplate is very dark brown.

The legs of the female are pale, with dark rings. The order of length, 4 3 1 2. The two front pairs of the male, and the thighs, are brownish-black, and their order of length is 4 1 3 2. The claws are long and slightly toothed.

The female is  $\frac{1}{6}$  inch long.

The female of *Salticus distinctus* forms a flattened cocoon, about  $\frac{1}{8}$  inch in diameter, for which she constructs a white silken cell in a crevice of a stone wall. It is found in July.

8. *Salticus floricola*. The female is not yet described. The falces are short. The lip is triangular. The breastplate oval. The abdomen is egg-shaped. The cephalo-

thorax is large, and slopes behind and a little overhangs the falces.

The shield has whitish hairs on its sides and in front; and a line of them down part of the middle, and round the two large front eyes are red hairs. The abdomen is hairy. There is an oval cluster of regular white markings on it. There is a white spot over the spinnerets, of which the upper pair is blackish and the lower pairs are pale. The abdomen is covered below with white hairs, as is also the breastplate, which is dark brown.

The legs are thick, spinous, and hairy, pale, with dark rings. The order of length is 4 1 3 2. Below the claws, which are plain, is a brush or pad of hairs.

Length of the male,  $\frac{1}{5}$  inch.

9. *Salticus gracilis*. The falces are small and toothed. Dark coloured and palest at the tip. The lip oval and coloured like the falces, as are also the maxillæ. The breastplate is oval, and the abdomen egg-shaped, pointed behind. The cephalothorax is raised in the middle, and slopes down before and behind, overhanging the falces.

The shield is very dark, with a line of pale hairs behind the eyes and in front. The abdomen is very dark and hairy, banded and spotted with pale colour. The abdomen is pale below, with a broad stripe of dark colour down the middle, and the breastplate is dark.

The legs and female palpi are short and pale, and the legs are ringed. Order of length, 4 3 1 2. Claws toothed.

Length of the female rather more than  $\frac{1}{8}$  inch.

10. *Salticus cupreus*. (Plate IV. fig. 2 ♀.) The cephalothorax is small, and rather broadest about the middle. The abdomen is egg-shaped, and pointed behind.

The markings in this spider are not invariable, nor always easy to observe. The shield is dark brown, with a metallic green hue. Behind the eyes is a doubly-curved white line, followed by two pairs of oblique white lines, and there is a faint white line on the sides. The abdomen is dark green; the fore part is embraced by a curved white line, which continues more than halfway to the spinnerets. After this are four oblique white marks. The breastplate is dark, and so is the under side of the abdomen, which has whitish hairs. The male is much darker than the female, or nearly black.

The legs are yellow with black streaks. The order of length in the female is 4 3 1 2; in the male, 4 1 3 2. The claws are toothed.

The female is less than  $\frac{1}{4}$  inch long.

The *Salticus cupreus* constructs a nest of compact white silk in a crevice of a rock, or of the bark of a tree, on the under side of a stone, or of a leaf, into which she retires to lay her eggs. These are pale below, and are enclosed in a very slight cocoon. Particles of earth, etc., are frequently adherent to the outside of the nest.

There are many varieties of this spider,

11. *Salticus notatus*. The falces are small and toothed. The abdomen is egg-shaped, pointed behind. The cephalothorax slopes suddenly behind, and overhangs the falces in front.

This spider is of a brownish-black colour, and is thinly clothed with white hairs; a line of these also nearly surrounds the abdomen, down the middle of which there is a pale-brown band, widening behind.

The legs are thick, hairy, and spinous, pale in colour, with one black spot on the haunch. The order of length is  $4 \frac{1}{3}$  2. Claws not toothed.

The female is  $\frac{1}{4}$  inch long.

12. *Salticus promptus*. The foremost eyes are ringed with white hairs. The falces are small and minutely toothed. The lip is triangular, and rounded at the tip. The breastplate is oval. The abdomen is a long egg-shape. The sides of the cephalothorax are parallel. It slopes suddenly behind, is flat before, and overhangs the falces.

The spider is yellowish. The shield is dark on the fore part of the upper side and on the edges. Between this dark part and the base are dark streaks running in various directions. The abdomen is hairy, and covered by a series of curved lines, composed of spots or streaks. The spider is yellowish below, with irregular black spots on the abdomen; a margin of black upon the breastplate, and a black line on each of the two upper spinnerets.

The legs are hairy; a double row of spines runs along the lower part of the fore legs, on the thigh of which, as on the haunch of the hindmost, is one black spot. The order of length is 4 1 3 2. Claws toothed.

The female (not full grown) rather over  $\frac{1}{8}$  inch.

13. *Salticus reticulatus*. The falces lean a little towards the breastplate. The lip is triangular. The breastplate long heart-shaped. The abdomen is egg-shaped, widest in the middle. The cephalothorax is of nearly equal breadth behind and before, slopes suddenly behind, and overhangs the falces in front.

This little spider is light brown, the abdomen being paler than the shield, which is dark towards the eyes. The abdomen is streaked on the fore part and sides, and has a series of dark angles running down the hinder half in the middle. It is rather more faintly marked below. The breastplate is pale.

The legs are pale, strong, and hairy. There are two rows of spines on the under side of the two first pairs. The claws are plain, and have a small pad of hairs below them. The order of length is 4 1 3 2.

The female is  $\frac{1}{10}$  inch long.

Found in woods.

14. ***Salticus Jenynsii***. The lip is rather oval. The breastplate oval. The abdomen is egg-shaped and pointed behind. The cephalothorax overhangs the falces.

The shield is covered with yellowish-brown and black hairs. Its edges are black, and above them, on each side, is a line of pale colour. The abdomen is thickly covered with short yellowish-brown hairs mixed with long black ones. A fork of pale colour, edged with white, beyond which is another pale-brown line, runs from the spinnerets, opening towards the base of the abdomen. A faint whitish line crosses the fork. Below the abdomen is a band of dark colour pointed towards the spinnerets, and the breastplate is brown with dark edges.

The two first pairs of legs are the thickest. The legs are hairy and spinous, pale, with a black line along the thigh, and reaching below the knee-joints. The claws are plain, and there is a pad of hairs below them.

The female is rather less than  $\frac{1}{3}$  inch.

15. ***Salticus Blackwallii***. The lip is oval. The breastplate oval, broadest behind. The abdomen is a long, tapering oval, pointed at the spinnerets. The cephalothorax is large, slopes down suddenly behind, and overhangs the falces in front.

The shield of the female is brownish. The sides and hind edges are blackish, as are the fore part, a medial

line, some slanting lines and spots. The abdomen is lightish-brown. Two bands formed of large blackish confluent spots run down the upper side, converging at the end. On the sides are oblique dark streaks or spots, and the under part of the abdomen has some fine dark speckling.

The legs are thick, especially the first pair; pale, with a row of black spots on the thighs and below the knee-joints. They are hairy, and the two first pairs have a double row of spines. The claws are plain, and there is a pad below them. The female palpi have one small black spot upon them.

The female is  $\frac{1}{3}$  inch long.

16. *Salticus tardigradus*. The falces are short, strong, and toothed. The breastplate is oval, broadest behind. The cephalothorax is large and flattened. The abdomen is a long, pointed, egg-shape, broadest before.

The shield is dark-brown with blackish edges and markings, thickly covered with whitish, reddish, and black hairs, and has long pale hairs between the eyes and the falces. The abdomen is hairy, like the cephalothorax. A broad, grey band, toothed at the edges, and having a black border, runs down the middle, and sends out oblique greyish lines between which are black ones. The sides are dark-brown, darkest above, and the abdomen is grey below, speckled with black. The breastplate is dark-brown with whitish hairs at the hinder part.

The legs are thick, especially the thighs of the first pair, short, hairy, and spinous. They are pale, streaked, spotted, and ringed with darker colour. The claws are toothed.

The female is nearly  $\frac{1}{2}$  inch long.

The cocoon is white, of slight texture, and a flattened shape,  $\frac{1}{8}$  inch in diameter.

17. *Salticus formicarius*. The abdomen is egg-shaped, pointed at both ends. The cephalothorax slopes suddenly behind and is much longer than it is broad.

The fore half of the shield is black, the hinder half reddish-brown. The abdomen is reddish-brown on the fore-half, and black on the hinder. A white line divides the brown and black halves. The breastplate is reddish-brown.

The legs and female palpi are reddish-brown, the first pair of legs having dark thighs and black lines on them. The fourth pair is longest. The male has long, large, projecting palpi.

The female is  $\frac{1}{4}$  inch long.

This spider so closely resembles an ant that it might easily be mistaken for one. It is very rare as a British species, but has been found in Scotland. It is peculiar in its motions, being extremely slow in the pursuit of its prey, and as remarkably agile in getting out of the way of danger. It preys on small flies and aphides, which it approaches with great circumspection, but if it sees any sign of danger it raises its body by straightening its legs in order to reconnoitre, and then runs away with great rapidity. The nest, which is formed beneath stones or under the bark of trees, is very small, oval, flat, and open at the two ends, and is of an extremely fine and transparent texture. The cocoon is small, and nearly round.

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## FAMILY IV. THOMISIDÆ.

## Genus I. THOMISUS.

*Eyes.* Not very different in size. In two rows, both, or one, in the shape of a crescent with its convexity towards the face. The lateral eyes are seated on tubercles. The largest are either the four lateral eyes\*, or they are the four which form the front line\*\*. (Plate I. fig. 8, *T. cristatus*.)

*Falces.* Short, wedge-shaped, more or less conical, without teeth.

*Maxillæ.* Leaning towards the lip, pointed at the tip.

*Lip.* Triangular, but rounded at the tip, or oval.



Fig. 12.  
Maxillæ and lip  
of *T. cristatus*.

*Legs.* Spreading laterally. The two first pairs much longer and more powerful than the others.

*Claws of feet.* Two. Toothed, and without hair-pads.

*Cephalothorax.* Large. Broad at the base, rather contracted towards the face, but wide in front.

*Breastplate.* Heart-shaped.

*Abdomen.* Short and broad; broadest behind or in the middle, not always overhanging the cephalothorax; frequently pitted or dented on the upper side.

*The length of the female, from  $\frac{1}{2}$  to  $\frac{1}{4}$  inch. The male is usually smaller and darker.*

These spiders are remarkable for their shortness and breadth (except a few males, whose abdomens are small), for the position of the legs, and the great length and strength of the two first pairs. A fine faint marking of undulating lines runs along the sides and round the extremity of the abdomen.



\* *The lateral eyes largest.*

\* 1. *Thomisus brevipes*. The falces are wedge-shaped. The lip is oval. The abdomen is flattened, wrinkled, much the broadest behind, and overhangs the cephalothorax. The cephalothorax slopes suddenly behind.

The spider is thinly covered with short hairs. On the shield is a large patch of yellow, broadest at the eyes and spotted with brown. The sides are darker and mottled, and their edges are yellow. The abdomen is pale-brown, palest in the middle towards the base. It is speckled with reddish-brown, and the hinder half is streaked transversely with a darker colour, with which the sides are also streaked and spotted. The under side of the abdomen has three long faint bands of darkish colour, and the breastplate is yellow, mottled with dark brown or black.

The legs are short. The palpal claw of the female is plain.

The female is  $\frac{1}{8}$  inch long.

\* 2. *Thomisus cristatus*. (Plate IV. fig. 3 ♂ ; eyes, Plate I. fig. 8 ; maxillæ and lip, fig. 12, p. 66.) The lip is triangular, but is rounded at the tip. The abdomen is broader behind than before, flattened, wrinkled, and ends abruptly at the cephalothorax, which it overhangs. It has five small pits or dents on the upper side. The cephalothorax slopes both behind and before.

This spider is thinly covered with short black hairs. The shield is pale at the edges and along the fore part. Running down the middle, beginning at the eyes, is a forked line of brown colour on a pale ground, and the sides are mottled brown. The abdomen has on the upper side a dark patch, on which lies a broad pale band, deeply toothed or scalloped at the edges, and the sides

are pale brown with darker streaks. The male is very much darker than the female. The under side of the abdomen is pale-brown, and the breastplate is of reddish-brown and pale colour mottled.

The legs are strong and hairy. The two longest pairs have a double row of spines on the under side. They are pale, streaked and spotted in the female. In the male, the upper side of the thighs is dark and the feet are pale. The palpal claw of the female is toothed.

The female is  $\frac{1}{4}$  inch long.

*Thomisus cristatus* is a very common spider, but there are varieties of it which are not at all times easy to recognize. This *Thomisus* is one of several species, belonging to various families, which have the habit of rising into the air by the help of fine silken threads emitted from their spinnerets, and which, being carried upward and onward by currents in the air, raise the spiders, and enable them to float to considerable distances. Different reasons are assigned for this practice of spiders; Mr. Blackwall attributing it to a desire to migrate, while Messrs. Kirby and Spence seem to be of opinion that these are hunting expeditions.

Mr. Blackwall distinguishes between these threads spun for the purpose of flight, and those which form the well-known webs called *gossamer*, of which he says that they "are composed of lines spun by spiders, which, on being brought into contact by the mechanical action of gentle airs, adhere together, till, by continual additions, they are accumulated into irregular white flakes and masses of considerable magnitude. Occasionally spiders may be found on gossamer webs after an ascending current of rarified air has separated them from the objects to which they were attached, and has raised them into

the atmosphere ; but as they never make use of them intentionally in the performance of their aeronautic expeditions, it must always be regarded as a fortuitous circumstance." There are some very interesting details relating to this subject in the 'Introduction to Entomology,' by Kirby and Spence.

*Thomisus cristatus* is especially remarkable as an aeronaut when young.

The cocoon is formed in July. It is white, flattened, and about  $\frac{1}{8}$  inch in diameter, and is found fastened to the lower side of a stone, or within a rolled-up leaf. The spider itself is found from the early days of spring to autumn. It hunts upon bushes and low shrubs, spinning long lines from branch to branch, to serve as paths in pursuing its prey. In the spring its chief prey is flies, etc., but later in the year it feeds chiefly on young spiders.

\* 3. *Thomisus audax*. (Plate IV. fig. 4 ♀.) The falces are somewhat conical, and the lip is rather oval. The abdomen is broader behind than before, round on the upper side, and ends abruptly at the cephalothorax, which it overhangs, and which is roundish above and slopes down behind.

The shield is pale yellowish-white across the eyes and down the middle, on which is a long pale-brown triangle, with the point towards the abdomen. On each side is a broad mottled brown band, pointed in front and rounded behind, with a large pale uneven blotch on its hinder part. The upper side of the abdomen is pale-brown, and bears a broad yellowish-white pattern, deeply toothed (or zigzag) at the sides. The under side of the abdomen and the breastplate are pale, with small black or brown spots.

The legs are hairy ; the two first pairs have two rows of spines below. The palpi of the female are short, and their claw is toothed.

The female is  $\frac{1}{4}$  inch long.

4. *Thomisus erraticus*. The eye tubercles are pale. The falces are wedge-shaped. The maxillæ increase in size at the insertion of the palpi. The lip is triangular. The breastplate a long heart-shape. The abdomen is flattened, much broader behind than before, and overhangs the cephalothorax, which slopes down in front.

The shield is glossy and pale brown, with a lighter long horseshoe mark. On each side of this is a longitudinal dark streak, beginning at the end eyes of the hind crescent, outside each of which is another dark band. The margins are dark. The abdomen is pale above, with a short dark streak reaching halfway down from the base, and on each side of it is a broad irregular dark band, connected above the spinnerets by some waved transverse lines. There are five dark dents or pits, one near the base of the abdomen, and two on each side of the central dark streak. The abdomen is pale below, and mottled with dark colour in the middle. The breastplate is reddish-brown.

The legs and palpi are hairy and spinous, pale reddish-brown in the female and darker in the male, especially the upper part of the two fore pairs. The order of length is 2 1 4 3, the two first long pairs being nearly equal to each other, as are the two hinder and shorter pairs.

The female is less than  $\frac{1}{4}$  inch.

The cocoon of *Thomisus erraticus* is found in June. It is flattened, white, and  $\frac{1}{4}$  inch in diameter, and is generally attached to the lower side of a dead leaf. The species is not common.

The legs are pale, strong, and hairy. There are two rows of spines on the under side of the two first pairs. The claws are plain, and have a small pad of hairs below them. The order of length is 4 1 3 2.

The female is  $\frac{1}{16}$  inch long.

Found in woods.

14. *Salticus Jönynsii*. The lip is rather oval. The breastplate oval. The abdomen is egg-shaped and pointed behind. The cephalothorax overhangs the falces.

The shield is covered with yellowish-brown and black hairs. Its edges are black, and above them, on each side, is a line of pale colour. The abdomen is thickly covered with short yellowish-brown hairs mixed with long black ones. A fork of pale colour, edged with white, beyond which is another pale-brown line, runs from the spinnerets, opening towards the base of the abdomen. A faint whitish line crosses the fork. Below the abdomen is a band of dark colour pointed towards the spinnerets, and the breastplate is brown with dark edges.

The two first pairs of legs are the thickest. The legs are hairy and spinous, pale, with a black line along the thigh, and reaching below the knee-joints. The claws are plain, and there is a pad of hairs below them.

The female is rather less than  $\frac{1}{8}$  inch.

15. *Salticus Blackwallii*. The lip is oval. The breastplate oval, broadest behind. The abdomen is a long, tapering oval, pointed at the spinnerets. The cephalothorax is large, slopes down suddenly behind, and overhangs the falces in front.

The shield of the female is brownish. The sides and hind edges are blackish, as are the fore part, a medial

line, some slanting lines and spots. The abdomen is lightish-brown. Two bands formed of large blackish confluent spots run down the upper side, converging at the end. On the sides are oblique dark streaks or spots, and the under part of the abdomen has some fine dark speckling.

The legs are thick, especially the first pair; pale, with a row of black spots on the thighs and below the knee-joints. They are hairy, and the two first pairs have a double row of spines. The claws are plain, and there is a pad below them. The female palpi have one small black spot upon them.

The female is  $\frac{1}{3}$  inch long.

16. *Salticus tardigradus*. The falces are short, strong, and toothed. The breastplate is oval, broadest behind. The cephalothorax is large and flattened. The abdomen is a long, pointed, egg-shape, broadest before.

The shield is dark-brown with blackish edges and markings, thickly covered with whitish, reddish, and black hairs, and has long pale hairs between the eyes and the falces. The abdomen is hairy, like the cephalothorax. A broad, grey band, toothed at the edges, and having a black border, runs down the middle, and sends out oblique greyish lines between which are black ones. The sides are dark-brown, darkest above, and the abdomen is grey below, speckled with black. The breastplate is dark-brown with whitish hairs at the hinder part.

The legs are thick, especially the thighs of the first pair, short, hairy, and spinous. They are pale, streaked, spotted, and ringed with darker colour. The claws are toothed.

The female is nearly  $\frac{1}{2}$  inch long.

the female, and reddish in the male. The abdomen is slightly hairy, bright red above, palest in the middle, and whitish at the sides. At the hinder end are faint pale transverse lines. The abdomen is pale red below with whitish spots.

The legs and palpi are greenish or greenish-yellow in the female, reddish in the male.

The female is less than  $\frac{1}{4}$  inch.

\* 9. *Thomisus floricolens*. The falces are short and rather conical. The lip is inclined to oval. The abdomen is egg-shaped, broadest in the middle, round on the upper side, and overhanging. The cephalothorax is glossy, round above, and slopes down behind.

The male and female differ in colour and in markings.

The shield, with the legs and other appendages of the female, are greenish. The abdomen is pale yellowish- or whitish-brown, with a broad brown mark down it pointed at the ends, bounded by an irregular line of darker colour, and containing a longitudinal dark streak.

The male is much more slender than the female. The shield is reddish, black at the edges, and brown towards the face. The legs are reddish and green, with brown rings and sometimes spots. The abdomen is pale yellowish- or whitish-brown, with a broadish brown mark extending about halfway from the base on each side of the middle, succeeded by a series of oblique dark markings. On each side is a longitudinal brown band, and the fore part of the abdomen below is reddish-brown. The two fore pairs of legs are extremely long. In the male the order of length is 1 2 4 3. The palpal claw of the female is toothed.

The female is less than  $\frac{1}{4}$  inch.

This species has been found in chalk and limestone districts.

\* 10. *Thomisus luctuosus*. The falces are short and wedge-shaped. The lip is triangular. The breastplate is long, heart-shape. The abdomen is much broader behind than before, flattish above, rather wrinkled on the sides, and overhanging. The cephalothorax slopes down behind and before.

The shield is brown, with darker lines; the side edges have a fine whitish line; there is a whitish forked line in the middle, a dark patch on each side, on which is a whitish spot, and the tubercles of the front pair of eyes have a faint palish spot. The abdomen is slightly hairy, pale, with dark mottling. A lightish band down the middle sends out a few pale streaks, and above the spinners are a few curved streaks across the abdomen. The abdomen is pale below, and the breastplate light and dark-brown mottled.

The legs are brown, streaked, and spotted. In the male the two first pairs are the darkest. The order of length is 2 1 4 3. The palpal claw of the female is hooked.

The female is a little more than  $\frac{1}{4}$  inch.

This spider is found in woods and pastures. The cocoon is formed in June; it is flattened,  $\frac{1}{4}$  inch in diameter, and white. The female sometimes forms a shelter for it by slightly connecting two leaves with silk threads, between which she places it, and where she remains with it.

\* 11. *Thomisus bifasciatus*. The falces are wedge-shaped. The maxillæ are enlarged at the insertion of the palpi. The lip is long and triangular. The breastplate a long heart-shape. The abdomen is broader behind



than before, flattish above, and overhanging. The cephalothorax is glossy, and slopes before and behind.

The spider is of a reddish-brown colour. A pale mark crosses the shield, which is glossy, where the eyes are situated, and pale longitudinal lines run down the sides; those next the middle converging at the base. Down the sides of the abdomen run pale lines, and the hinder half has pale oblique streaks. Five conspicuous pits occur on the upper side. Below and on the sides the abdomen is wrinkled and reddish-brown. The breast-plate is pale reddish-brown, spotted with darker colour.

The legs of the female are pale, the thighs of the two first pairs being streaked. The legs of the male are darker, the upper part of the two first pairs being very dark. They are hairy and spinous. The foreclaws are deeply toothed. The order of length is 2 1 4 3. The palpi of the female are hairy and spinous.

The female is rather less than  $\frac{1}{8}$  inch.

The cocoon is white, flattened, and between  $\frac{1}{4}$  and  $\frac{1}{2}$  inch in diameter, and is found on the under side of leaves, which are folded down to shelter it.

\* 12. *Thomisus Cambridgii*. The palces are rather conical. The lip is triangular. The abdomen is broader behind than before, round above, and overhanging. The cephalothorax slopes in front and behind, has a small slit-like dent near the base, and a fringe of dark hairs across the face.

The shield is mottled-brown on the sides, with whitish margins, and a large triangular whitish mark, on the broad base of which the eyes are situated, a faintly darker triangle lying down the middle. The abdomen is slightly hairy, of a reddish-brown colour. A pale line surrounds a heart-shaped space on the middle of the fore

part, having its point to the base, and containing seven pale-coloured pits, from the foremost of which a pale straight line runs to the posterior part of the heart-shaped space. Outside this are other pale lines and oblique dark streaks, with rows of spots near the spinnerets. The abdomen below and the breastplate are pale, with small dark spots. On the abdomen are longitudinal dark lines.

The legs are hairy, with two rows of spines on the two first pairs. In the female they are pale, streaked, spotted, and ringed with darker colour. The upper part of the two first pairs in the male is very dark. The foot-claws are deeply toothed. The order of length is  $\frac{1}{4}$  2 3. The female palpi are pale, hairy, and spinous.

The female is less than  $\frac{1}{4}$  inch.

\* 13. *Thomisus pallidus*. The falces are rather conical, and are bristled in front inside. The lip is triangular. The abdomen has short strong hairs, is flattened above, much broader behind than before, cut straight across in front, overhangs the cephalothorax, and is wrinkled and marked with five pits. The cephalothorax slopes behind.

This spider is of a pale yellowish colour above, below, and on the legs. A dark line extends from each lateral eye of the hind crescent nearly to the base of the shield, outside which the colour is rather darker, and there is a faint triangle of darkish colour down the middle of the shield.

The legs and palpi are hairy and spinous. The order of length, 2 1 3 4. The palpal claw is toothed.

The female is rather less than  $\frac{1}{4}$  inch long.

\* 14. *Thomisus versutus*. The lateral eyes, especially those of the front row, are much the largest. The falces are rather conical, and bristled in front. The lip

is triangular. The abdomen is much broader behind than before, is flattened above, wrinkled, especially on the sides, cut straight across in front, overhangs the shield, and is marked with five pits. The cephalothorax is round above, slopes behind, and has a fringe of dark hairs across the face.

In the female the shield is pale. From the two end eyes of the hind row runs a dark band, and there is a faint darkish mark in the middle. The abdomen is yellowish-grey marked with brown. A whitish patch down the middle is bounded by a dark crenated and zigzag line, and crossed on the hinder part by transverse lines. The outer side of the dark line is reddish. The breastplate and under side of the abdomen are pale.

The male is much smaller and of a reddish-brown colour, with less distinct marks than the female. The edges of the shield are whitish, and the bands on its sides are black. The breastplate is dark reddish-brown.

The legs are hairy; the two first pairs have two rows of spines. In the female the legs are pale yellowish-brown; in the male they are reddish-brown. The foot-claws are long, black, and toothed near the base. The palpal claw is black, curved, and plain. The order of length in the legs is 1 4 2 3.

The female is less than  $\frac{1}{4}$  inch long.

\* 15. *Thomisus trux*. The female is not yet described. The falcæ are rather conical and dark, with a lighter spot in the front. The maxillæ increase in size at the insertion of the palpi. The lip is triangular. The abdomen is broader behind than before, is flattish above, wrinkled, especially on the sides, cut straight across in front, overhangs the cephalothorax, and is marked with five pits. The cephalothorax slopes suddenly behind.

The shield is red-brown, and a black band runs down each side of the middle. The sides are black. The abdomen is pale yellowish-brown. The middle space is bounded by dark lines, which converge at the spinnerets. On the hinder part of this space are transverse dark lines, and in the centre of its fore part are two convergent dark lines. The abdomen is dark and mottled below and on the side. The breastplate is pale.

The legs are hairy and spinous, pale, darkest at the upper end. The order of length is 2 1 4 3.

The length of the male is  $\frac{1}{7}$  inch.

\* 16. *Thomisus incertus*. The falces are rather conical; the maxillæ increase in size at the insertion of the palpi. The lip is triangular. The abdomen is broader behind than before, is flattish and overhanging, and has a few hairs. The cephalothorax slopes suddenly behind.

The shield is whitish at the edges, reddish-brown in the middle, and has a dark mottled band down each side, pointed at the eyes and broad behind. In the female the abdomen is yellowish, with a pale band down the middle, pointed at the spinnerets, on which are two indistinct darker lines. On each side are short transverse dark markings. Below it is pale, with dark spots. The breastplate has a few dark spots on each side, and a line down the middle of the hinder half. The legs and palpi are pale, ringed and spotted, and the palpal claw is toothed. In the male the abdomen is dark brown, shaded with reddish-brown, and mottled with pale colour on the sides.

The first pair of legs have black thighs, reddish below, and some dark spots. The rest are reddish-brown with dark rings and spots. The order of length in the legs is  $\frac{1}{2}$  4 3.

The female is less than  $\frac{1}{2}$  inch.

The cocoon of this species is white, flattish, and  $\frac{1}{4}$  inch in diameter.

\* 17. *Thomisus clavatus*. The side eyes are on a slight eminence, and are widely separated from each other, those of the front row are much the largest. The falces are wedge-shaped, and lean much towards the lip. The lip is triangular. The abdomen is broad in proportion to its length, broadest in the middle, and rounded behind; it is roundish above, wrinkled, and overhanging. The cephalothorax is wrinkled and sloped behind, clothed, chiefly in front and down the middle, with club-shaped hairs.

The shield is pale at the edges, reddish-brown down the middle, and brown on the sides. The abdomen is yellowish-brown, striped transversely at the hinder part with curved dark lines. The sides and middle are streaked and spotted. The abdomen is pale below, with two oblique streaks formed of irregular spots, and a notched projection near the base. The breastplate is pale.

The legs and palpi are hairy and spinous, and of a palish brown. The first and second pairs of legs have a double row of spines on the under side. The order of length is 2 1 4 3.

The female is  $\frac{1}{2}$  inch long.

*\*\* The front crescent composed of the four largest eyes.*

\*\* 18. *Thomisus citreus*. (Plate IV. fig. 5 ♀; 5 ♂.) The maxillæ increase in size at the insertion of the palpi. The lip is rather oval and pointed at the tip. The abdomen of the female is much broader behind than before, and is flattened and overhanging. The

upper and the under side have each two longitudinal rows of minute pits. The cephalothorax slopes behind.

The male and female differ greatly in colour.

The female is yellow (or sometimes green, greenish, or white), with a green band down each side of the shield. Sometimes the fore part of the side of the abdomen has an irregular reddish-brown stripe. The two fore pairs of legs are much the longest and strongest. The foot-claws are black and deeply toothed, and the palpal claw is toothed.

The male is half the length of the female, with a slender egg-shaped abdomen. It is striped green and black (or dark brown) on the abdomen and shield. The abdomen is reddish-brown down the middle, the breast-plate and two first pairs of legs, which are much the longest and strongest, being of the same colour. The other legs are greenish-yellow, excepting the haunch, which is reddish-brown.

The female is a little more than  $\frac{1}{2}$  inch long. The male is about  $\frac{1}{8}$ .

This species is chiefly to be found in flowers.

**\*\* 19. *Thomisus abbreviatus*.** (Plate IV. fig. 6 ♀.) The lateral eyes are placed on the side of a high tubercle, which occurs on each side of the cephalothorax. The falces are wedge-shaped, and have a brown spot in front. The maxillæ increase in size at the insertion of the palpi, and are cut aslant at the tip on the outer side. The lip is a long oval. The abdomen is hairy, large, and broad, and so abruptly bent down behind as to have a truncated appearance. There is an angular projection on each side of the upper part at the edge of the bend. There are five pits on the upper side and two lines of minute pits below. The cephalothorax

slants down suddenly behind, and a small point projects from the face.

This spider is yellow, palest underneath and brownish on the shield, especially down the sides. It is occasionally paler or whitish in colour, and streaked or spotted with pink.

The legs are hairy and spinous, the two first pairs have two rows of spines on the under side. The palpi of the female are short, and their claw is toothed.

The female is  $\frac{3}{8}$  inch long.

#### Genus II. PHILODROMUS.

*Eyes.* In two crescent-shaped rows, with their convexity towards the face. They are either nearly equal in size, or those at the ends of one or both crescents are the largest, and are sometimes placed on tubercles. (Plate I. fig. 9, *P. cæspitosus*.)

*Falces.* More or less conical, sometimes slightly toothed.



Fig. 13.  
Maxillæ and lip  
of *P. cæspitosus*.

*Maxillæ.* Curving towards each other at the base.

*Lip.* Triangular, sometimes rounded at the tip, or oval.

*Legs.* Spreading laterally; long; 2 1 3 4.

*Claws of feet.* Two; toothed, and furnished below with a hair pad.

*Cephalothorax.* Short, broad, especially at the base, contracted towards the face.

*Abdomen.* Egg-shaped or long, overhanging the cephalothorax.

*Breastplate.* Heart-shaped.

*The females are about  $\frac{1}{4}$  inch. The males are usually smaller.*

1. *Philodromus dispar*. (Plate V. fig. 1 ♀ ; 1 a ♂.) The end eyes of the crescents are on tubercles, those at the end of the hinder crescent being the largest of the eyes. The maxillæ are gibbous. The lip is triangular, but round at the tip. The abdomen is notched in front and pointed behind, and is broader behind than before.

In the female the shield is very pale brown, with a dark brown patch on each side, pointed towards the lateral eyes. The abdomen is covered above with grey hairs before and yellow behind. An irregular dark line running round the sides encloses a large space, in which (under the hairs) is a dark band reaching from the base to the middle of the abdomen, and succeeded by a series of pairs of dark curved transverse lines filling the hinder half of the space. The sides of the abdomen are grey with brown spots; the under side is grey, and has a brownish stripe down the middle. The breastplate is pale brown, speckled with black. The male is brown above and below, with the edges of the shield, the sides of the abdomen, and some hairs on its fore part white. The shield and abdomen have darker brown markings.

The legs and female palpi are pale and speckled with black. The legs are hairy and spinous, and the two first pairs are the most powerful. They are long, especially in the male.

The female is a little less than  $\frac{1}{4}$  inch.

2. *Philodromus pallidus*. The end eyes of both crescents are placed on tubercles, those of the hind crescent being the largest, whilst the middle eyes of the front crescent are the smallest of the eight. The falces have a light whitish spot in front. The maxillæ are convex near the base. The lip is round at the tip. The abdomen is notched in front and pointed behind, broader



behind than before, and roundish above. The cephalothorax is round above and furrowed on the sides.

The shield is light grey, mixed with pale and dark brown. There is a complicated brown pattern in the middle, beyond which are oblique brown streaks, with spots near their outer ends. It is whitish on the margins, and at the front row of eyes. The abdomen is greenish-grey, with several oblique dark curved lines on each side of the middle on the hinder part. Two oblique black lines, edged with long white hairs, run down the sides, which are also mottled with black. The breastplate and under side of the abdomen are pale brown, with four dark lines running through the length of the latter, and converging at the tip.

The legs and the female palpi are pale reddish-brown, the palpi and first pair of legs having a dark streak on them. The legs are long, especially in the male.

The female is  $\frac{1}{4}$  inch long. The male is smaller and darker.

The cocoon is white.

3. *Philodromus elegans*. (Plate V. fig. 2 ♀.) The lip is pointed. The abdomen is broadest in the middle, and hairy.

This spider is of a pale brown colour, with darker reddish-brown markings. The shield is whitish at the edges. A broad brown band, pointed near the eyes, is on each side, and in the middle there is a dark stripe pointed at both ends. The abdomen is pale down the middle, on which part is a long narrow mark, pointed at the base, and ending in three points at the middle of the abdomen. This is followed by a succession of short curved, darkish transverse bands. The

sides are brown. The under side is pale, and has three oblique bands, which meet at the spinnerets. The breastplate is pale reddish-brown, darkest at the edges.

The legs are hairy and spinous, and, with the palpi, are pale, with darker rings.

The female is rather less than  $\frac{1}{4}$  inch long.

4. *Philodromus cæspiticolis*. (Plate V. fig. 3 ♀; eyes, Plate I, fig. 9; max., etc., fig. 13, p. 82.) The lip is pointed. The abdomen is broadest in the middle, and hairy.

This spider is pale brown, with reddish-brown markings. In the female the shield is pale in the middle and whitish at the edges. The abdomen is palest down the middle, on which part are darker markings; a long narrow brown triangle, with the point to the base of the abdomen, reaches almost halfway, and is succeeded by a series of curved transverse bands, which grow shorter towards the spinnerets. Outside the pale part the sides are brown. The abdomen is whitish below, with three convergent darker lines, and the breastplate is pale reddish-brown, darkest at the edges. The male is smaller and darker than the female, and differs in the abdominal marks. A series of overlapping triangles, dark, with light edges, reaches down the central pale part, and a longitudinal line of spots occurs on the sides.

The legs and female palpi are pale reddish-brown, darkest at the joints. The legs are longer in the male than in the female.

The female is about  $\frac{1}{4}$  inch.

This species is found on furze, heath, etc. The female conceals herself with usually two flattened white cocoons in a large nest, which she forms upon the end of a branch

of some shrub, drawing the leaves into a convenient position with silken threads, which form a close tissue of a somewhat grey colour. The cocoons are frequently of unequal size, the largest being about  $\frac{1}{4}$  inch in diameter. If a cocoon be touched, the mother will not take flight, but will defend it with all her power.

5. *Philodromus Clarkii*. The female is not yet described. The eyes are on whitish spots, those at the ends of the crescents being on tubercles. The maxillæ are gibbous. The lip is triangular. The abdomen is egg-shaped.

The spider is reddish-brown above and below, speckled with darker colour. The abdomen is palest at the sides, and two curved lines of whitish spots run down it, meeting at the tip.

The legs are hairy and spinous.

The length of the male is  $\frac{1}{7}$  inch.

6. *Philodromus variatus*. The end eyes of the crescents are the largest, and are on tubercles. The falces have one or two small teeth on the edge of the groove. The maxillæ are gibbous. The lip is blunt. The abdomen is egg-shaped and round above, and has four dark brown pits.

The shield is pale brown, mixed with dark brown on the sides. The abdomen is of pale and dark brown mixed. A dark line runs about half its length; some oblique dark patches succeed this, one curved transverse line, and two lines running upwards from the spinnerets. The abdomen is yellowish-white, with somewhat of a green tinge, and has a broad band down the middle. The breastplate is pale brown, with reddish-brown edges. The lip and palpi are pale brown.

The female is  $\frac{1}{4}$  inch long.

The cocoon is white, flattened, of slight texture, and  $\frac{1}{4}$  inch in diameter. It is found early in June.

7. *Philodromus mistus*. The end eyes of the hind crescent are the largest, and are on tubercles. The falces have one or two small teeth on the edge of the groove. The maxillæ increase in size at the insertion of the palpi, and are gibbous. The lip is round at the tip. The abdomen is egg-shaped and round above.

The shield is hairy, pale brown, whitish at the edges, and has a broad dark brown patch down each side. The abdomen is pale and reddish-brown mottled, with a long dark patch reaching about halfway down it, and a dark line round the sides, which sends up faint oblique streaks. Below, the abdomen is whitish, speckled with reddish-brown, and has three stripes of the same colour. The breastplate is pale brown, speckled with black.

The legs are hairy and spinous, and, with the female palpi, are pale and minutely speckled.

The female is rather less than  $\frac{1}{4}$  inch.

The cocoon is white, flattened, of slight texture, and is  $\frac{1}{4}$  inch in diameter. It is formed in June.

8. *Philodromus aureolus*. The end eyes of the crescent are on tubercles. The maxillæ are gibbous. The lip is round at the tip. The abdomen is pointed behind and roundish above. The cephalothorax is large and round above.

The shield is mottled. It is pale down the middle, and brownish-red on the sides. The abdomen is pale yellow down the middle, and reddish-brown on the sides. On the upper pale space are, first, short line or patch of brownish-red, and then a series of short oblique lines down each side, pointing upward and forward, and becoming gradually shorter towards the end. Below,

the abdomen is pale, speckled with reddish-brown, and has a band down it of reddish-brown. The breastplate is pale yellow, mottled with reddish-brown.

The legs are hairy and spinous, and, with the palpi of the female, are pale yellow, except part of the first two pairs of legs which is brownish-red.

The female is  $\frac{1}{4}$  inch long.

The cocoon is formed in June. It is of a flat shape, and is bound down upon walls or the trunks of trees by a small round covering of white silk.

9. *Philodromus oblongus*. (Plate V. fig. 4 ♀.) The eyes are small, the hind crescent much the longest. The falcies have one or two teeth on the edge of the groove. The lip is oval. The abdomen is hairy, very long, and a little notched in front. The cephalothorax is rather egg-shaped.

The spider is yellowish-white, with brown markings. Down the middle of the shield is a brown line, forked at the eyes, and a brown band, pointed before, runs down each side. A brown stripe runs down the middle, and one on each side of the abdomen, on the pale part of which are two spots near the end, and several others less distinct. A broad brown band, pointed towards the tip, runs down the under side of the abdomen, and the breastplate is spotted.

The legs and female palpi are pale and spotted. The palpal claw is slightly toothed.

The female is less than  $\frac{1}{2}$  inch.

### Genus III. SPARASSUS.

*Eyes*. Four, of equal size, form a straight line behind, and in front two smaller and two larger eyes form a

crescent with its convex side to the face. Of these, the two outer are the largest.

*Falces.* Conical and toothed.

*Maxillæ.* Straight, rather rounded at the end, and leaning towards the lip.

*Lip.* Small, short, and oval.

*Legs.* Long and strong, hairy and spinous. The order of length 2 4 1 3.

*Claws of feet.* Two. Deeply toothed and furnished below with a hair pad.

*Palpal claw.* Toothed.

*Cephalothorax.* Contracted towards the face; convex, furrowed, and toothed in the middle.

*Abdomen.* A long egg-shape.

*Breastplate.* Heart-shaped.

*Length of the female more than  $\frac{1}{2}$  inch.*

*Sparassus smaragdulus.* (Plate V. fig. 5 ♀, 5 a ♂; eyes, Plate I. fig. 10.)

The female of this spider is entirely green. The shield is deeper in colour than the abdomen. This has a dark green angular mark, pointed at the end and pale at the edges, down the middle. The young male resembles the female in colour, but when full grown the abdomen has a broad yellow band down the upper side, bordered by two bright red lines, and bearing a bright red angular mark, pointed at the end, down the middle.

The female is more than  $\frac{1}{2}$  inch. The male is smaller.

The *Sparassus* is very rapid in its motions, running swiftly after its prey upon the earth or on grass. The female constructs a cell by rolling two or three leaves, and binding them with silken threads; and in this she places a large round green cocoon, with a covering of slight texture.

## FAMILY V. DRASSIDÆ.

## Genus I. DRASSUS.

*Eyes.* In two transverse rows, more or less curved. Not very unequal in size, sometimes on tubercles. (Plate I. fig. 11 *a*, *D. cupreus*; fig. 11 *b*, *D. ferrugineus*.)

*Falces.* More or less conical.

*Maxillæ.* Various in form. Long. They curve towards the lip, and are sometimes gibbous at the base.



Fig. 14.  
Maxillæ and lip of  
*Drassus cupreus*.

*Lip.* Inclined to oval, hanging in the form of the tip.

*Legs.* Strong.

*Claws of feet.* Two. Toothed or simple; sometimes furnished below with a hair pad.

*Cephalothorax.* Longer than broad, broader behind than before.

*Abdomen.* A long oval; sometimes pitted; not always overhanging the cephalothorax.

*Breastplate.* Oval or heart-shaped.

*Length of the female from  $\frac{1}{2}$  to  $\frac{1}{5}$  inch. The male is usually rather smaller, and in this genus does not greatly vary from the female in proportions.*

1. *Drassus lucifugus.* The two rows of eyes are curved different ways. The front row is the darkest and the least curved. The falces are strong. The maxillæ are very large at the insertion of the palpi. The lip is round at the tip. The breastplate is heart-shaped. The abdomen is flattish on the upper side, and has six pits. It is rather broadest behind, and overhanging. The cephalothorax is contracted towards the face, and is furrowed on the sides.

The shield and breastplate are reddish-brown, and covered with hairs. The abdomen is entirely black ; gills yellow. When young, the spider has a reddish hue.

The legs and female palpi are reddish-brown, and are very dark in the middle.

The female is  $\frac{1}{2}$  inch long.

This is at present a rare species. The cocoons are formed in June. They are two in number, flattish, white, and between  $\frac{3}{4}$  and 1 inch in diameter. They are found in a tubular cell on the earth, or fastened to the under side of a stone. The eggs are yellow.

2. *Drassus ater*. The two rows of eyes are parallel, and nearly straight. The two middle eyes of the front row are the smallest, and are on a protuberance. The falces are toothed. The maxillæ are gibbous and furrowed slantingly near the end. The lip is oval. The breastplate is oval. The abdomen is hairy, and rather overhanging ; and the cephalothorax is oval, rather pointed towards the face.

This spider is nearly black. The thighs and ends of the legs are reddish-brown. The shield and breastplate are glossy, and have a few hairs, while the abdomen is thickly clothed with them.

The foot and female palpal claws are toothed.

The female is rather less than  $\frac{1}{2}$  inch.

The habits of *Drassus ater* are nocturnal. The female constructs a large white cell of close texture, usually in a hole in the earth or under a stone, and in this, in the month of May, she places a plano-convex cocoon, which is attached by its flat side to the stone or other substance on which the cell is formed. This cocoon is white or slightly yellowish at first, but afterwards becomes reddish in colour. The female remains on guard by her eggs.



3. *Drassus pusillus*. The two rows of eyes are nearly straight. The middle eyes of the front row are the smallest and darkest of the eight, and are placed on a small tubercle. The maxillæ are furrowed slantingly across the tip. The lip is round at the tip. The breast-plate is heart-shaped. The abdomen is round above, and overhanging. The cephalothorax is oval, pointed at the face, furrowed on the sides and dented near the base.

The spider is slender, and is entirely black, excepting the ends of the female palpi and of the third and fourth pairs of legs, which are reddish-brown, and the ends of the two first pairs of legs, which are yellowish.

The foot and female palpal claws are toothed.

The female is less than  $\frac{1}{4}$  inch.

This species is to be distinguished from *Drassus ater* by the size, the colour of the legs, and of the palpi.

4. *Drassus pumilus*. The front row of eyes is slightly curved, and in the middle are the smallest of the eight. The hind row is nearly straight, and its middle eyes are nearer together. The maxillæ are furrowed slantingly across, near the end. The lip is long, round at the tip. The breastplate is oval. The abdomen is a little flattened and overhanging. The cephalothorax is oval, slightly furrowed, and rather small towards the face.

In the female the shield is dark brown, with dark edges, and not very distinct dark markings. In the male it is black. The abdomen is black.

The legs are hairy and spinous, each leg being yellow on the haunch and thigh, reddish at the tip, and brown between. The female palpi are yellow and brown, and the foot-claws are toothed.

The female is less than  $\frac{1}{8}$  inch.

5. *Drassus clavator*. The female is not yet described. The eyes are pellucid. The two rows are curved, with the ends of the crescents towards the face. They are nearly equal in size, but the two middle eyes of the hind crescent are the largest of the eight; they are near together and oval. The two end eyes are each on a tubercle. The falces are rather prominent. The maxillæ are large at the tip. The lip is oval. The breastplate is heart-shaped, broad, and has small eminences on the sides. The abdomen is slightly overhanging. The cephalothorax is oval, furrowed on the sides, and dented near the base.

The shield is pale brown, with black edges and fine dark veining. The abdomen is blackish, and covered with reddish hairs, and has a few long black hairs in front. On each side of the middle in front there are three small pale spots, which are succeeded by a series of faint pale crescent lines. These markings and lines are inconspicuous. On the under side of the abdomen are two faint pale lines, and the gills and spinnerets are pale brown. The breastplate is brown, darkest at the edges.

The legs and female palpi are pale brown. The order of length in the legs 4 1 2 3.

The male is  $\frac{1}{4}$  inch long.

6. *Drassus sericeus*. The two rows of eyes are nearly parallel. The front row is the shortest, and its two middle eyes are the largest of the eight. The falces are toothed. The maxillæ are grooved slantingly across, near the end. The lip is long, oval, round at the tip. The breastplate is a long oval, broadest behind. The abdomen is a little flattened, overhanging, and in the female rather broadest behind. On the upper side are four

pits. The cephalothorax is oval, and rather small towards the face; and has two kinds of hairs, soft and pale, and strong and dark.

The shield, breastplate, legs, palpi, and spinnerets are brown. The abdomen, a rather more greenish-brown, is thickly clothed above with black hairs. Below, the abdomen has two fine sunk lines running down it.

The foot and female palpal claws are toothed. There is a pad of hairs or papillæ below the feet.

The female is rather less than  $\frac{1}{2}$  inch.

*Drassus sericeus* inhabits old houses, and is found in Wales and in the North of England.

**7. *Drassus reticulatus*.** The eyes are round. The two rows are nearly parallel. The front row is the shortest. Its two middle eyes are much the largest of the eight, and are black. The middle eyes of the hinder row are the smallest of the eight, and are near together. The four middle eyes form a square figure. The falcæ are toothed. The maxillæ are large towards the end, which is cut aslant on the side next the lip. The breastplate is oval, broader behind than before. The abdomen is overhanging. The cephalothorax is oval, and small towards the face.

The shield, legs, breastplate, and female palpi are pale brown, thinly covered with hairs. The abdomen is pale olive-brown, with a network pattern of pale lines, and is thinly covered with whitish hairs.

The legs are hairy and spinous. The foot-claws are toothed.

The female is less than  $\frac{1}{2}$  inch.

**8. *Drassus sylvestris*.** The two rows of eyes are parallel and a little curved, with the ends of the crescents towards the face. The front crescent is shorter than

the hind, and its two middle eyes are the smallest of the eight. The middle eyes of the hind crescent are oval, and rather near together. The four middle eyes form a square figure. The falces are toothed and projecting. The maxillæ are long, large at the insertion of the palpi, and again towards the end, which is cut aslant on the side next the lip. The lip is long and round at the tip. The breastplate is oval, rather pointed behind, and has small eminences on the sides. The cephalothorax is oval.

The shield, legs, palpi, and breastplate are reddish-brown. The abdomen is dull greenish, with a darker line, pointed at both ends, running down the middle. This is succeeded by several short whitish lines, forming obtuse angles with their points, towards the base of the abdomen.

The legs are hairy, with a few spines. The foot and palpal claws are plain. In the male, the first and fourth pairs are of equal length.

The female is less than  $\frac{1}{2}$  inch long.

The cocoon is white, of a flattened shape, and a little less than  $\frac{1}{3}$  inch in diameter. It is formed in July, and concealed in a silken cell in a hole in the earth under stones. The mother is usually found with her cocoon.

9. *Drassus cupreus*. (Plate VI. fig. 1 ♀; eyes, Plate I. fig. 11 *a*; maxillæ and lip, fig. 14, p. 90.) The two rows of eyes are very slightly curved, the ends of the crescents being towards the face. The front row is rather the shortest, and its middle eyes are the smallest of the eight. The middle eyes of the hind row are oval. The four middle eyes form a square. The falces are toothed. The maxillæ are long, large at the insertion of the palpi, and again towards the tip, which is cut aslant at the side next the lip. The lip is truncated at

the tip, and the breastplate, which is oval, has small eminences on the sides. The cephalothorax is oval, and furrowed on the sides.

This spider is of a pale reddish-brown. The edges of the shield are blackish. The abdomen is thickly clothed with copper-coloured hairs, palest below. There is a tuft of black hairs on the fore part, and a tapering blackish stripe sometimes runs about half of its length. The old female sometimes becomes greyish-brown. The edges of the breastplate are blackish.

The legs are rather hairy and spinous, and pale reddish-brown. In the male, the first pair is longer than the fourth. The palpal claw of the female is toothed.

The female is less than  $\frac{1}{2}$  inch long.

The cocoon and habits of the females of this species resemble those of the former.

10. *Drassus lapidicolens*. The eyes are in black spots, and are in two slightly curved rows. The front row is the shortest, and its middle eyes are the largest and darkest of the eight. The hinder row has the smallest of the eight at its ends, and the middle eyes are oval and rather near together. The two pairs of middle eyes form a square figure. The falces have a tooth-like projection on the inside, near the tip. The maxillæ are grooved slantingly across the middle, are large towards the end, which is hairy on the inner edge and is cut off aslant towards the lip. The lip is round at the tip. The breastplate is oval, and has small eminences on the sides. The abdomen is broadest in the middle, roundish above, and rather overhanging. The cephalothorax is large, rounded above, not much broader behind than before, rather contracted towards the face, where it is broad, and indented near the base.

The shield is red-brown with darker edges, and the face is dark. The abdomen is greyish-brown, with sometimes a faint darker streak reaching halfway down its upper side. On the fore part, and in a line reaching halfway down the middle, are some black hairs. The breastplate is reddish-brown with dark edges.

The legs are paler than the shield; the foot-claws toothed, and furnished with a hair-pad.

The male is nearly  $\frac{1}{2}$  inch.

This *Drassus* conceals herself in a cell formed between the surface of the earth and the under side of a stone, near which she spins some threads, forming an irregular snare. In this cell, in the month of July or August, she places her cocoon, covering it with dead leaves. This is at first in the form of a flattened sphere, but becomes nearly round when the young are about to escape. It is white, and  $\frac{1}{2}$  inch in diameter. The mother remains with her young for some time after the eggs are hatched.

11. *Drassus ferrugineus*. (Eyes, Plate I. fig. 11 *b*.)

The shield is long, oval, narrow towards the face, and, with the legs and breastplate, is of a reddish-brown. The abdomen is long, oval, and cream-coloured, with a darker line, which is pointed at the end, reaching about two-thirds of its length, and on each side of it there are three pits. The lip is pointed.

The female is nearly  $\frac{1}{2}$  inch.

12. *Drassus micans*. The female is not yet described. The two rows of eyes are short and curved, with the ends of the crescents towards the face. The middle eyes of the front row are the smallest and darkest of all, and the middle eyes of the hind row are rather wide apart. The falces have a slight projection near the

base, and two small teeth on the inner side. The maxillæ are large at the insertion of the palpi, gibbous at the base, rounded at the tip, and have a sharp projection on the outer side. The lip is round at the tip. The breastplate is oval, pointed behind, and convex. The abdomen is round above and overhanging. The cephalothorax is oval, rather narrow at the face, and furrowed at the sides.

The spider is glossy. The shield is red-brown. On the upper side in the middle are six short convergent lines of white hairs. The abdomen is slightly hairy, deep black, and shows in the light a bright metallic colouring. Below, the abdomen is brown down the middle, with a curved line of white hairs across the fore part, and spots of similar hairs near the spinnerets. The breastplate has convergent dark streaks. The legs are yellowish-brown. The thighs of the two first pairs, and part of the thighs of the third and fourth pairs, are dark. The order of length is 4 1 2 3.

The claws are simple and furnished below with a hair-pad.

The male is  $\frac{1}{2}$  inch long.

13. *Drassus nitens*. (Plate VI. fig. 2 ♀.) The two rows of eyes are curved, with the ends of the crescents towards the face. The middle eyes of the front row are the smallest of the eight, and the middle eyes of the hind row are rather wider apart. The falces have a few very small teeth. The maxillæ are gibbous at the base, large at the insertion of the palpi, and towards the tip, which is rounded. The lip is rounded at the tip. The breastplate is a long oval, pointed behind. The abdomen is a little overhanging. The cephalothorax is oval and narrow at the face.

The shield is dark brown or blackish. On its upper side are six faint, short, convergent white lines. The abdomen is deep black, showing bright metallic colouring in the light. There is a small white curved transverse line on the fore part, with its rounded side towards the base. About halfway down is another white curved transverse line, with the curve reversed in the middle. Near each end of this is a white spot, and a small longitudinal row of white spots is above the spinnerets. On each side, near the base, is an oblique white line. The breastplate is dark. The markings on this species are not invariable. The legs are brown, with a red tinge. The two first pairs are partly dark. The order of length is 4 1 2 3.

The claws are simple, and furnished below with a hair-pad.

The female is less than  $\frac{1}{4}$  inch.

The cocoons formed by this beautiful little spider are about  $\frac{1}{6}$  inch in diameter, hemispherical, and white. The mother inhabits a tube which proceeds from the upper side of the cocoon. The spider is found running on the ground in spring and summer.

14. *Drassus propinquus*. The female is not described. The two rows of eyes are short and slightly curved, with the ends of the crescents towards the face. The middle eyes of the front row are the smallest and darkest. The falces have a few small teeth. The maxillæ are broad at the base, large at the insertion of the palpi, and round at the tip. The lip is round at the tip. The breastplate is heart-shaped. The abdomen a little overhangs the cephalothorax. The cephalothorax is oval, furrowed on the sides, dented near the base, and pointed at the face in the female, but less so in the male.



The shield is brown, darkest at the edges. It has a few whitish hairs, of which are formed six faint convergent lines in the middle of the shield. The abdomen is dark brown. There are two small yellowish-brown spots at the fore part, from between which a fine short line of the same colour runs to the middle of the abdomen, and is cut across at the end by a transverse line which, curving in various directions, passes to the lower part of the abdomen. Above the spinnerets is a small spot of whitish hairs. The abdomen is paler below than above; the breastplate is brown.

The legs are long and thin, hairy and spinous, of a pale brown, except the upper end of the two first pairs, which is dark. The foot-claws are plain, and furnished below with a hair-pad.

The male is less than  $\frac{1}{2}$  inch.

## Genus II. CLUBIONA.

*Eyes.* In two transverse rows, which are sometimes curved. Not very unequal in size. (Plate I. fig. 12 *a*, *C. holosericea*; fig. 12 *b*, *C. formosa*.)

*Falces.* More or less conical. Toothed on one or both sides of the groove, or not toothed.



Fig. 15.  
Falces, maxillæ,  
and lip of *C. ho-*  
*losericea*.

*Maxillæ.* Long and straight. Enlarged at the end, sometimes also at the insertion of the palpi.

*Lip.* Long.

*Legs.* Strong. The fourth or first pair longest.

*Claws of feet.* Two. Toothed. Sometimes furnished below with a hair-pad.

*Cephalothorax.* Rather broadest behind, or with the sides nearly parallel, indented near the base.

*Abdomen.* Oval. Generally long, sometimes pitted. Overhanging the cephalothorax.

*Breastplate.* Oval or heart-shaped, with small eminences on the sides opposite the legs.

*Spinnerets.* Conspicuous.

*The female is from  $\frac{1}{2}$  to  $\frac{1}{8}$  inch. The male is usually smaller and more slender.*

1. *Clubiona holosericea*. (Plate VI. fig. 3 ♀ ; eyes, Plate I. fig. 12 a.) The two rows of eyes are nearly straight. The front row is the shortest, and its middle eyes are the largest of the eight. The middle eyes of the hind row are further apart than those of the front. The falces have one row of teeth. The maxillæ are long, straight, and enlarged at the insertion of the palpi. The lip has a considerable notch at the tip. (See Fig. 15, p. 100.) The breastplate is oval. The cephalothorax is broadest behind.

The shield is pale greenish-brown, darkest at the face, with faint black veinings, and black edges. The abdomen is thickly clothed with short soft grey hairs, which are more sparingly distributed on the shield. The legs are hairy and spinous, reddish-brown, with paler streaks. The order of length is 4 2 1 3.

The foot-claws are furnished below with a hair-pad. The palpal claw of the female is simple.

The female is nearly  $\frac{1}{2}$  inch long.

*Clubiona holosericea* is common in woody parts of the country, and is found on the leaves and flowers of plants, under stones, in holes in walls, and in many other situations. The cocoon, which is white, flattish, and  $\frac{1}{4}$  inch in diameter, is formed in June, and is placed in a long tube-shaped cell, formed on the under side of a leaf or in some crevice as of the bark of a tree. The female remains

in this cell, except when she leaves it to pounce upon an insect passing near its opening, and which she carries into the cell. This cell is divided into two chambers, in which in the month of June the male and female may be found, each occupying one. This spider is timid until she becomes a mother, when she will face any danger rather than abandon her cocoon. Before that time, if driven from her cell, she falls to the earth (without drawing a line by which to suspend herself), feigns death for some time, and then, making a rapid flight, sets to work to build a new house in a fresh place.

This and the following species feed much upon the eggs of other spiders, whilst their own cocoons are said to be very liable to the attacks of other spiders and of various insects. Amongst these is one who lays in the cocoon an egg producing a large larva, which eats the whole contents of the cocoon before the spider perceives any sign of its presence.

2. *Clubiona amarantha*. (Plate VI. fig. 4 ♀.) The front row of eyes is the shortest, and its middle eyes are rather the smallest of the eight. The middle eyes of the hind row are rather wide apart. The falcæ are hairy, and have a few small teeth. The maxillæ are long, straight, gibbous, enlarged at the insertion of the palpi, and cut off aslant at the tip on the inner side, where they have a fringe of hairs. The lip is small at the base, and cut straight at the tip. The breastplate is oval. The cephalothorax is broadest behind, and wide at the face.

The shield is yellowish-brown, reddish in front, and thinly clothed with hairs. The abdomen is thickly covered with hairs, a few black hairs occurring also on the fore part. It is brownish-red, a dark line reaches

through about half of its length, and is succeeded by a series of lines in the form of obtuse angles, diminishing in length as they approach the tip. Below, the abdomen is paler, the breastplate is pale yellowish-brown, speckled at the sides.

The legs are hairy, spinous and pale, and there is a hair-pad below the claws. The order of length is 4 2 1 3.

The female is a little more than  $\frac{1}{4}$  in.

This species resembles the preceding in habits, and in the form, etc., of the cocoon and cell.

3. *Clubiona epimelas*. The front row of eyes is the shortest. The middle eyes of the hind row are rather wide apart. The falces have two rows of teeth. The maxillæ are long, straight, enlarged at the insertion of the palpi, and cut off aslant at the tip. The lip is cut straight at the tip. The breastplate is oval and narrow. The cephalothorax is rather oval and broad at the face.

The shield is brown, with black veinings and edges, and thinly covered with pale hairs. The abdomen is dark brown, with pale hairs. The hairs on the under side of the abdomen are grey. The gills are large and yellow. The breastplate is reddish-brown in the middle and dark beyond.

The legs are hairy and spinous, dark and striped. There is a hair-pad below the claws. The order of length is 4 2 1 3.

The female is less than  $\frac{1}{2}$  inch in length.

This spider is found under dead leaves and in stone walls, where, in June, the female forms a white cocoon, flat on one side, and rounded on the other, which, with herself, remains concealed in a silken cell. The cocoon is upwards of  $\frac{1}{4}$  inch in diameter.

4. *Clubiona formosa*. The abdomen is long, oval,

and marked with four pits. The cephalothorax is long and oval.

The shield is pale yellowish-brown, reddish at the face, has a black line down the middle, and dark edges. The abdomen is reddish-brown above, crossed throughout its length by short, pale, transverse streaks, from the ends of which pale or white lines run towards the base. Below, the abdomen is brown, with four longitudinal lines of pale spots. The breastplate is dark brown.

The legs are hairy, spinous, and, except at the extremities, the under side of which is black, are pale.

The female is nearly  $\frac{1}{2}$  inch long.

This spider is very rare.

5. *Clubiona corticalis*. The front row of eyes is the shortest. The middle eyes of the hind row are the largest of the eight, and are wider apart than those of the front. The falcæ are toothed. The maxillæ are long, straight, gibbous, enlarged at the insertion of the palpi, and cut off aslant at the tip, where there is a fringe of hairs. The lip is cut straight at the tip. The breastplate is oval. The cephalothorax is not much broader behind than before, and is wide at the face.

The shield is reddish-brown, darkest towards the face. The abdomen is thickly covered with hairs. It is dark-brown. Two irregularly shaped pale-brown bands on the fore part enclose a long dark mark, which is pointed at the end. This is succeeded by a series of pale-brown lines, forming obtuse angles, which diminish in length as they approach the spinnerets. The abdomen is pale brown below. The breastplate is reddish-brown, with dark edges.

The legs are hairy, spinous, and furnished below the claws with a hair-pad. The order of length is 4 2 1 3 in the female; 2 4 1 3 in the male.

The female is rather less than  $\frac{1}{4}$  inch.

The cocoon is found in July, is white, flattened, and more than  $\frac{1}{4}$  inch in diameter. This is placed in a cell of greyish silk, which is rendered more substantial by the addition of foreign substances, grains of sand, parts of insects, etc., and is fastened to the under side of a leaf, or in a crevice in the bark of a tree.

6. *Clubiona brevipes*. The two rows of eyes are parallel. The front row is the shortest, and its middle eyes are the largest of the eight. The middle eyes of the hind row are wider apart than those of the front. The falces have a few teeth. The maxillæ are long, straight, enlarged at the insertion of the palpi, and round at the tip. The lip is cut straight across at the tip. The breastplate is oval. The abdomen is flattish above. The cephalothorax is broad at the face.

The shield is dark brown, darkest in front and at the edges. The abdomen is dark reddish-brown, with a line of darker colour reaching halfway down it. The breastplate is dark reddish-brown.

The legs are pale yellowish, and they are furnished with a hair-pad. The order of length is 4 1 2 3. The palpi of the female have a plain claw.

The female is  $\frac{1}{4}$  inch.

This spider has the power of leaping.

7. *Clubiona comta*. The two rows of eyes are parallel. The front row is the shortest; and its middle eyes are the smallest of the eight. The middle eyes of the hind row are rather wider apart than those of the front. The falces are prominent. The maxillæ are long, straight, enlarged at the insertion of the palpi, and rounded at the tip. The lip is oblong. The breastplate is oval. The abdomen is flattish above. The cephalo-

thorax is long, very little broader behind than before, and wide at the face.

The shield is brown, reddish in front, and greenish-brown behind and at the sides, with a dark line on the edges. The abdomen is hairy, yellowish-brown, pale at the sides, and dark down the middle; on which is a light pattern consisting of two long pale patches, each of which is succeeded by a series of oblique spots or patches diminishing towards the spinnerets. The abdomen is pale below, with three pale bands. The breastplate is yellowish-brown, with dark spots at the edges.

The legs are pale, hairy, and spinous. There is a hair-pad. The order of length is 4 2 1 3. The palpal claw of the female is plain.

The female is less than  $\frac{1}{4}$  inch long.

*Clubiona comta* is a rare spider. The cell resembles that of the other species.

8. *Clubiona pallens*. The front row of eyes is the shortest, and is nearly straight. Its middle eyes are the largest and darkest of the eight. The hinder row is curved, with the ends of the crescent towards the face, and its two middle eyes are rather wider apart than those of the front row. The falcæ are prominent, hairy, and have one or two small teeth. The maxillæ are long, straight, and enlarged at the insertion of the palpi. The lip is oval, cut straight across the tip, but with a little notch in the middle. The breastplate is oval. The abdomen is round above. The sides of the cephalothorax are nearly parallel.

The spider is covered with short hairs. The shield is yellowish-brown with a greenish tinge, darkest at the face. The abdomen is yellowish-red above, with some black hairs on the fore part. The abdomen is paler

below than above. The breastplate is pale yellowish-brown.

The legs and palpi are pale, hairy, and spinous. There is a hair-pad below the foot claws. The order of length is 4 2 1 3.

The female is  $\frac{1}{8}$  inch long.

9. *Clubiona accentuata*. (Plate VI. fig. 5 ♀.) The front row of eyes is the shortest, and is straight. Its middle eyes are the smallest of all. The hind row is crescent-shaped, forming a half-circle, with the front row for its chord, and its middle eyes are rather wide apart. The teeth of the falces are few and very small. The maxillæ widen gradually towards the tip, which is round. The lip is cut straight at the tip. The breastplate is heart-shaped. The cephalothorax is not much broader behind than before, and is wide at the face.

The shield is dented. It is yellowish-brown down the middle, and has a dark long patch on each side. In the male there are six rather convergent pale lines on the bands. The abdomen is reddish-brown. About the middle are two uneven inverted V-like marks, and the sides and hind part are speckled with black. The under side of the abdomen is yellowish-brown, sparingly spotted with black. The breastplate is glossy pale brown, with a broad uneven black band round it.

The legs are hairy and spinous, with a small hair-pad under the claws. They are pale, and in the female are spotted with black. In the male they have broad rings of black. The order of length is 1 4 2 3.

The female is  $\frac{1}{4}$  inch long.

This spider is rapid in its movements. It is found in woods. The cocoon is flattish, white, and nearly  $\frac{1}{2}$  inch in diameter, and is concealed in a cell formed on the



under side of one or more curved leaves. This cell is open at both ends, and contains an inner chamber, which the spider itself inhabits. The female does not, as in some other species, fight in defence of her cocoon, but leaves it at the approach of danger. In the autumn the *Clubiona accentuata* may be found running on the ground, like the *Lycosæ*.

10. *Clubiona domestica*. The eyes are on black spots. The front row is the shortest, and is nearly straight. The hind row is a little curved, with the ends of the crescent towards the face. Its middle eyes are the smallest, and its end eyes are the largest of all. The abdomen is round above. The cephalothorax is broadest behind, and indented. It is rather contracted towards the face, which is wide. The breastplate is oval.

The shield is dark brown at the sides and edges, with a broad uneven pale patch with angular sides running down the middle. The abdomen is brown or blackish, with a large irregular pale patch down the middle, which is divided into two arms at the fore part, and bears a series of short dark angular lines on its hinder part. The sides are mottled with paler colour, and the breastplate is brownish-yellow. The lower side of the abdomen is rather browner.

The legs are hairy, and the two first pairs have two rows of spires. They and the female palpi are pale, with faint darkish rings. The order of length in the legs is 4 1 2 3, and the palpal claw of the female is toothed.

The female is about  $\frac{1}{2}$  inch long.

11. *Clubiona nutrix*. The eyes are black. The middle eyes of the front row are on a brown spot. The falcies are long, especially so, and also spreading, in the male. The cephalothorax is oval.

The shield is glossy, of a yellowish colour except on the face, which has a red tinge, and the edges are pale. The abdomen is greenish-yellow in the female, with a network pattern of green upon it. In the male the abdomen is rather more yellow. A brown stripe pointed behind, and with a reddish-brown border, runs down it, and is succeeded by a large patch of the same hue. A line of pale spots occurs on each side. The abdomen is darker below than above, and the gills are yellow. The breastplate is glossy, and yellow.

The legs are long and yellowish. The order of length, 1 4 2 3.

The female is said to be from  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long.

This spider appears to be exceedingly rare.

12. *Clubiona erratica*. (Plate VI. fig. 6 ♀.) The eyes of the front row are the largest. Each pair of side eyes is seated on a tubercle, and they nearly touch each other. The palps are long, and rather spreading in the male. The maxillæ are straight. The lip is cut straight at the tip. The breastplate is heart-shaped. The cephalothorax is contracted towards the face, which is broad. The abdomen bears four pits.

The shield is reddish-brown. The abdomen is olive-green, with a reddish-brown stripe down it, which has a yellow edge, and from which a yellow line runs obliquely down the sides. The abdomen is olive-green below, with two yellow lines running down it. The gills are yellow. The breastplate is yellowish-brown in the middle, blackish at the edges.

The legs are pale yellowish-brown. The order of length, 1 4 3 2. The claw is toothed.

The female is about  $\frac{1}{2}$  inch.

The cocoon is very slight, white, and nearly round.

The mother places it in a nest, around which she forms a guard by binding together the branches of furze, or other plants, in the midst of which it is placed. She remains in the nest with her young.

### Genus III. ARGYRONETA.

*Eyes.* Of nearly equal size. In two rows. The middle eyes of the front row are on a slight projection of the cephalothorax, and are rather smaller than the rest. Each pair of side eyes is seated obliquely on a tubercle. (Plate I. fig. 13.)

*Falces.* Conical. Curving away from each other. The inner edge of the groove with two, and the outer with three teeth.

*Maxillæ.* Round at the tip, curved towards the lip.

*Lip.* Rather oval; broadest at base.

*Legs.* Thick. Order of length 1 4 2 3.

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Palpal claw* of female toothed.

*Cephalothorax.* Longer than broad; broader behind than before; contracted towards the face, and wrinkled on the sides.

*Abdomen.* Egg-shaped. Broader behind than before.

*Breastplate.* Heart-shaped.

*Argyroneta aquatica.* The shield is reddish-brown, and slightly hairy. The abdomen is very hairy, of an olive colour, and has four small pits on the upper side, the two foremost of which are nearer together than the two hinder. Below, the hairs on the abdomen are very long, as are those which thickly cover the breastplate. This is of a dark-brown colour.

The legs and palpi are dark reddish-brown. The palpal claw of the female is toothed.

The female is about  $\frac{1}{2}$  inch long, and the male is larger, which is unusual among spiders.

This remarkable spider lives chiefly under water, differing in this respect from the other diving spiders (such as *Lycosa piratica* and *Dolomedes fimbriatus*). These although capable of carrying down into the water sufficient air to support them there for a considerable period, neither build nor seek for prey below its surface.

The abdomen of the *Argyroneta* is covered with fine downy hairs, which, entangling a quantity of air, and detaining it around the body during its immersion in water, give to the spider when diving the appearance of a globule of quicksilver. The air thus surrounding the animal supplies the breathing organs, and enables it to live and breathe below the water as in a diving-bell. When the air is exhausted, or if, by any accident, it is disturbed and detached, the spider returns to the surface of the water and procures a fresh supply.

The *Argyroneta* constructs in the water a cell similar to that made by the other *Drassidæ* on land, and which she forms and provides with air in the following manner. She rises in the water with her head downward until her spinnerets reach the surface; she then spreads them, and, engaging between them a small bubble of air, rapidly descends to some plant, the stem of which she has chosen for the site of her nest. She brings the little bubble into contact with this, detaches it from herself, and leaves it clinging to the stalk. This process she repeats till the air has accumulated to the bulk of a small nut, when she spins around it a silken net like that formed by the *Clubionæ*. This she covers with a

semi-liquid substance (probably the silky matter in a state of solution), which she carefully kneads, moulding the whole into a dome-like cell or diving-bell, with an elastic slit-like opening on the under side, through which she passes in and out. From this cell she extends cords in various directions, which she attaches to the leaves and stalks of plants and to other objects, and which serve the double purpose of retaining the nest in its place, and of ensnaring (as in an ordinary spider's web) the small water-insects which form the food of the *Argyroneta*. The spider either sucks the juices of these on the spot, or, paralysing them with the poison of her fangs, carries them into her cell until she is ready to consume them. Sometimes, however, she merely kills them and leaves them in the web; and sometimes she feeds on flies and other terrestrial insects which have fallen into the water. Occasionally she comes on shore and hunts her prey, which she then carries into the water.

This spider lays from forty to one hundred round yellow eggs, which are enveloped in a fine, tough, white cocoon, of a flattish-round shape. The young, on emerging from the eggs, are each of them surrounded by their little air-bubble, and they live in the water, as do the adults. During the winter the *Argyroneta* remains in its cell in a torpid state.

This spider is found in many parts of England. It has been known to live without water, when in a state of captivity, for many days.

## FAMILY VI. CINIFLONIDÆ.

## Genus I. CINIFLO.

*Eyes.* In two transverse rows. The two end eyes on each side are set obliquely on a tubercle. The middle eyes of the front row are nearer together than those of the hinder. The eyes vary in relative size. (Plate I. fig. 14, *C. atrox*.)

*Falces.* Conical; with teeth; sometimes gibbous.

*Maxillæ.* Long, enlarged and rounded towards the end, curving towards the lip.

*Lip.* Long, broadest in the middle, cut straight at the tip.

*Legs.* Strong; furnished with a calamistrum. Order of length in the females, 1 4 2 3.

*Claws of feet.* Three. The two upper are toothed, and the lower has one tooth on each side near its base\*, or is simple\*\*.

*Cephalothorax.* Contracted towards the face.

*Abdomen.* Oval, round above and overhanging.

*Breastplate.* Heart-shaped or oval.

*Spinnerets.* Eight.

*The female is from about  $\frac{1}{2}$  inch to  $\frac{1}{10}$ . The male is smaller.*



Fig. 16.  
Spinnerets of *Ciniflo atrox*.

The peculiarities of this and the two other genera composing this family, consist in their possession of a fourth pair of spinnerets, those of one pair, however, being sometimes entirely united; of the calamistra, a peculiar apparatus (Fig. 5, p. 14), on the hind legs, used in constructing the web; and in the character of

the web so constructed. This web presents at first sight an irregular, ragged, and generally a dirty appearance, and might easily be passed by with little notice as an old or deserted web. On examination, however, even with the naked eye, it is found to differ greatly from the webs of other spiders, which—whether, as with *Theridiidæ* and others, they are a mass of clear and distinct lines; or, as with the *Agelinidæ* and others, are of a close even texture; or, as with the *Epeiridæ*, they are open nets constructed on a regular plan—are all composed of simple threads;\* whereas the web of the *Ciniflo* is a loose, irregular open net, formed of flocculous compound threads. These are very beautiful under the micro-

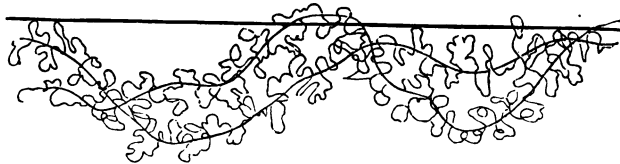


Fig. 17.  
Thread of *Ciniflo* web.

scope. One plain line usually forms the foundation of the compound thread, and this is accompanied by several lines of extreme fineness, some of which are merely slack, while the rest are curled and twisted in every direction by the operation of the spines forming the calamistra. When newly spun, these threads have to the naked eye a bluish colour, but being very apt to entangle dust, the net is most frequently found in a foul and discoloured state. When handled, it clings to the fingers with remarkable tenacity. This is said to arise

\* More correctly, of threads composed of many strands, which become entirely united. For further details, see the description of the *Epeira* web.

from the structure, rather than from any peculiar viscosity of the thread, but it is possible that further examination may prove that the *Ciniflo* thread possesses an additional, and as yet unknown characteristic. The bluish colour of the web has been already noticed, and, viewed in the microscope with the help of the parabolic condenser, the compound thread appears to be enveloped in something like a bluish cloud or vapour. Whatever this substance may be (and it is so transparent as easily to escape observation under even the most favourable circumstances), it is probably the cause of the colour of the web, and perhaps also of its clinging so closely to whatever it touches.

\* *The foot-claws all toothed.*

\* 1. *Ciniflo atrox*. (Plate VII. fig. 1 ♀ ; Plate I. fig. 14, eyes ; Fig. 16, p. 113, spinnerets.) The falces are gibbous, and their teeth small. The breastplate is oval, pointed behind. The abdomen is broader behind than before. The cephalothorax is wide in front, and has convergent wrinkles.

The shield is glossy and slightly hairy, and, in the female, very dark in front. The abdomen is hairy and dull brown. A palish band, narrowed at each end, runs down it. On the front half of this lies a dark patch, widest in front, with a yellowish border, and which ends abruptly, being followed by a series of oblique faint yellowish lines in pairs. Below and at the sides, the abdomen is covered with black spots and streaks. The spinnerets are pale. The gills are pale, with a dark mark between them. The breastplate is a reddish-brown colour, paler than the lip.

The legs are pale, ringed and tipped with dark colour.



The order of length in the female is 1 4 2 3, in the male 1 2 4 3, and the legs of the male are longer than those of the female.

The female is  $\frac{3}{8}$  inch.

The poisoned bite of this spider is said to be more rapid in its effect than that of other species, enabling the animal to attack wasps and other large insects with success.

The cocoon, which is concealed in a silken cell near the snare of the mother, is formed in June. It is of a flat-tish form and white colour, is about  $\frac{1}{4}$  inch in diameter, and is soiled with earth and other matters. When disturbed in its web, this *Ciniflo* drops suddenly to the ground, without attaching itself by a line to the point from which it falls, and feigns death. It has a peculiar habit of moving its fore legs up and down. In winter the spider remains concealed in some hole of a wall or other secure place, effectually guarded from cold and damp by the woollen-like substance of the covering in which it closely swathes itself.

\* 2. *Ciniflo similis*. (Plate VII. fig. 2 ♀.) This species is very like the preceding. On the front half of the abdomen is a faint, dull, yellowish stripe or patch, with an uneven black outline and a border of pale yellow.

Below, the abdomen has four lines down it, composed of very small pale spots, and on the sides also are pale spots, but these are not invariable.

The order of length in the legs of the female is 1 4 2 3. They are longer in the male, and their order of length is 1 2 4 3.

The female is a little over  $\frac{1}{2}$  inch.

\* 8. *Ciniflo ferox*. (Plate VII. fig. 3 ♀.) The eyes

are transparent, and the lateral eyes are the largest. The front row is at the edge of the shield. The breastplate is heart-shaped. The cephalothorax is large, wide in front, and has convergent wrinkles.

The shield is yellowish-brown, darkest in front and in the wrinkles. The abdomen is hairy, and is dark-brown speckled with whitish colour. Down the upper side a pattern is formed by three long irregular whitish patches (of which the middle one is pointed at the tip, and the others are club-shaped and curved) on the front half, which are succeeded by four pairs of oblique whitish spots, growing smaller towards the spinnerets.

This species differs greatly in the depth of its colour.

The abdomen has four whitish lines below, the two middle ones being the nearest together, rather faint and irregular. The spinnerets are pale at the tip. The gills are pale. The breastplate is glossy, pale brown, and has a few long black hairs. The legs are thick, hairy and spinous, pale with faint blackish rings. The palpal claw of the female is toothed.

The female is a little less than  $\frac{1}{2}$  inch.

This spider, which is rather larger than *C. atrox*, somewhat resembles it in its habits, but is more attached to secluded and dark hiding-places. The web is finer than that of *C. atrox*.

**\*\* *The lower foot-claw not toothed.***

**\*\* 4. *Ciniflo mordax*.** The front row of eyes is straight. The hind row is curved, with the end eyes of the crescent towards the face. The lateral eyes are the largest. The breastplate is oval. The cephalothorax is large, nearly equal in breadth throughout, very wide at the face, indented in the middle, and has convergent wrinkles.

The shield is reddish-brown, very dark in front. The abdomen is pale greenish-brown, covered with faint yellowish-white speckling. A pale yellowish-white band runs from the fore part to a point at about the middle. The abdomen is palest below, and has two faint yellowish-white lines down it. The spinnerets are reddish-brown, except the lower pair, which are pale and are united. The breastplate is pale reddish-brown, lightest in the middle.

The legs and the palpi of the female are red-brown. The palpal claw is toothed.

The female is more than  $\frac{1}{2}$  inch.

**\*\* 5. *Ciniflo humilis*.** The two inner eyes of the front row are the smallest and the darkest of all, and are nearer together than the inner eyes of the hind row. The breastplate is heart-shaped. The abdomen is a roundish egg-shape. The cephalothorax is small, very much wider behind than before, and narrow at the face.

This little spider is brown. The fore part of the shield is striped lengthways and the sides obliquely, and its edges are dark. The abdomen is a somewhat paler brown, covered on the sides with a fine dark network. A dark line runs down the middle, a little dilated in front and pointed behind. The last half of this line gives out a series of oblique club-shaped markings on either side, which diminish in size as they approach the spinnerets. Below, the abdomen has two brown stripes from the base to near the spinnerets, where there is a transverse brown stripe. The breastplate is dark brown.

The legs are pale and ringed.

The female is  $\frac{1}{10}$  inch long.

Genus II. *ERGATIS*.

*Eyes.* In two rows. The two end eyes on each side are set obliquely on a tubercle. The four inner eyes are equidistant. (Plate I. fig. 15, *E. benigna*.)

*Falces.* Conical; toothed or plain.

*Maxillæ.* Long; leaning towards the lip.

*Lip.* Triangular, rounded at the tip.

*Legs.* Short. Order of length, 1 2 4 3. Furnished with a calamistrum.

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Cephalothorax.* Broader behind than before, contracted towards the face.

*Abdomen.* Oval; round above, and overhanging.

*Breastplate.* Heart-shaped.

*Spinnerets.* Eight.

*The length of the female is about  $\frac{1}{8}$  inch.*

1. *Ergatis benigna*. (Plate VII. fig. 4 ♀; Plate I. fig. 15, eyes.) The falces of the male are longer than those of the female, and have a projection below and a smaller one in front. The cephalothorax is rounded at the face and behind, and has convergent wrinkles on the sides.



Fig. 18.  
Falces, maxillæ,  
and lip of *E.*  
*b. benigna*.

The shield is dark brown, with five lines of white hairs on the fore part, and white hairs on the face below the eyes. The abdomen is pale, nearly white on the upper side; on the fore part of which lies an irregular dark brown band. This is crossed by an uneven white line, after which several faint pale angular lines occur. The sides of the abdomen are dark brown with white mottling. Below, the abdomen is pale, with

a broad dark band, bearing white spots, down the middle. The breastplate has a few pale hairs.

The legs and palpi are brown.

The female is less than  $\frac{1}{8}$  inch.

This *Ergatis* weaves a slight and irregular web at the



Fig. 19.  
Snare, nest, and cocoons of *E. benigna*,  
a little enlarged.

end of grass-blossoms, heath, etc., in which she places together her cocoons, which are two or three in number, white, flat, and about  $\frac{1}{8}$  inch in diameter. The little spider is exceedingly bold, and frequently captures large flies, the remains of which may be found in her toils. Nevertheless, in her domestic relations she is more amiable than is usual among spiders, living peaceably with her husband. The nest is produced by

the joint labours of the two.

2. *Ergatis pallens*. (Plate VII. fig. 5 ♀.) The cephalothorax is rounded at the face, and has convergent wrinkles.

This little spider is yellowish. On the shield is a red-brown mark, broad at the base, but immediately dividing

into two branches, toothed at the outer side, and running each to a point near the lateral eyes. The yellow part is thickly covered with hairs. The abdomen, also, is hairy. At about one-third of its length a round dark red-brown spot occurs, which, after a considerable interval, is followed by a diminishing series of short transverse bands of the same colour. The sides are faintly streaked and spotted. The breastplate is reddish-brown, and a broad band of the same colour runs down the under side of the abdomen. The spinnerets of the lower pair are united.

The legs and female palpi are hairy and yellowish.

The length of the female is  $\frac{1}{4}$  inch.

3. *Ergatis latens*. (Plate VII. fig. 6 ♀.) The falces of the male are (as in *E. benigna*) longer than those of the female, and of a peculiar and irregular form. The cephalothorax is rounded at the face, slopes down behind, and has convergent wrinkles.

The colour of the shield is dark brown, with a few white hairs in front. The abdomen is hairy, and is grey, with a long black pattern, much cut at the edges, and pointed at each end, running from base to tip, with pale transverse lines on the hinder part. The sides are very dark. Below, a blackish band runs down the abdomen, and the breastplate, which is dark brown, is clothed with white hairs.

The legs and female palpi are short, and of a brown colour.

The female is  $\frac{1}{4}$  inch long.

The habits and web of this spider resemble those of *E. benigna*, but the cocoons are of a greenish colour.

## Genus III. VELEDA.

*Eyes.* In two crescents, with their ends turned from the face. The middle eyes of the front crescent are rather the largest, and the end eyes the smallest of all. The middle eyes of the hind crescent are rather wider apart than those of the front. Each of the four end-eyes is set on a tubercle. (Plate I. fig. 16, *V. lineata*.)

*Falces.* Conical.

*Maxillæ.* Rather large, and very much rounded at the tip.

*Lip.* Triangular, rounded at the tip.

*Legs.* The first pair very long. Order of length, 1 4 2 3. Furnished with a calamistrum.

*Cephalothorax.* Broader behind than before.

*Abdomen.* A long oval; round above and overhanging.

*Breastplate.* A long oval.

*Spinnerets.* Eight. One pair united.

*The length of the female is  $\frac{1}{8}$  inch.*

*Veleda lineata.* (Plate VII. fig. 7 ♀; Plate I. fig. 16, eyes.)



Fig. 20.  
Maxillæ of *V.*  
*lineata*.

The shield is dark brown, striped with three paler yellowish lines, and the edges are yellowish. The abdomen is thickly clothed in front and on the sides near the tip with white hairs. It is yellowish above, and has three brown stripes, which branch slightly towards the tip. The under side of the abdomen and the breastplate are dark brown or blackish, and the breastplate has a few white hairs.

The legs and female palpi are pale, with dark lines and rings.

## FAMILY VII. AGELENIDÆ.

## Genus I. AGELENA.

*Eyes.* In two rows, more or less curved, the ends of the crescents towards the face. (Plate I. fig. 17, *A. labyrinthica*; fig. 18, *Hyndmanii*.)

*Falces.* Conical. Sometimes plain, or with one or two rows of teeth.

*Maxillæ.* Short. Sometimes gibbous.

*Lip.* Rather square, or oval.

*Legs.* Rather long. Order of length, 4 1 2 3.

*Claws of feet.* Three, all toothed\*; or three, the two upper toothed and the lower plain\*\*; or two only, toothed\*\*\*.

*Cephalothorax.* Broader behind than before, contracted towards the face.

*Abdomen.* Egg-shaped, and overhanging the cephalothorax.

*Breastplate.* Heart-shaped.

*Spinnerets.* Forming a cluster (Fig. 21, p. 124) or a transverse line (Fig. 22, p. 126). One pair three-jointed and much longer than the rest, except in *A. gracilipes*.

*Length of the female, from  $\frac{1}{2}$  inch to  $\frac{1}{3}$  inch. The male smaller.*

\* Three foot-claws. All toothed.

\* 1. *Agelena labyrinthica*. (Plate VIII. fig. 1 ♀; Plate I. fig. 17, eyes.) The middle eyes of the front row are a little the largest of all. The four middle eyes are equidistant, and the end eyes at each side are placed on a tubercle. The falces have two rows of teeth. The maxillæ are very wide at the end, where they curve inward and are rounded. The lip is nearly equal in length and in breadth, rather broadest at the base. The abdo-



men is rounded on the upper side and overhanging. The cephalothorax is indented, and has convergent wrinkles.

The shield is reddish-brown with dark edges, and has a dark patch, broad at the base and tapering to the eyes on each side. The abdomen is hairy, has a broad brown patch down it tapering to the tip, on which is a pale yellowish line, sending out oblique club-shaped pale spots on each side, and followed by a pale spot at the tip. The sides of the abdomen are brown and yellow, mottled, streaked and spotted obliquely with reddish-



Fig. 21.  
Spinnerets of *A.*  
*labyrinthica*.

brown, and the under side has a yellowish stripe down the middle, and brown and yellow stripes on each side. The breast-plate is reddish-brown. The spinnerets are in a cluster, the upper pair very long.

The legs are hairy and spinous, reddish-brown, ringed, darkest towards the feet and greenish at the upper end. The lower claw has two rows of two or three small teeth. The female palpal claw is toothed.

The female is  $\frac{1}{2}$  inch long.

This spider occurs, frequently in large numbers, on heaths, commons, and elsewhere. Its large and beautiful snare and dwelling-place are too conspicuous to escape observation, and are easily recognized.

Over the surface of the low plants, heath, dwarf furze, etc., or amongst the branches of shrubs, or sometimes on the ground amongst dead leaves, etc., the *Agelena* stretches, in a horizontal position, a large strong white web of very compact texture. From part of this snare a large cylindrical tube runs downwards, at the mouth of which the spider may usually be seen watching for the prey on which he is ready to dart with singular rapidity

at the moment of its touching the snare. This tube frequently opens into one or more tubular chambers, forming a beautiful structure, which is so substantially woven that the examination of it is very easy. In one of these chambers the female conceals her one or two cocoons, which are formed in the month of August. On the approach of danger, the spider instantly darts backwards into the tube, and, if pursued, escapes through an opening at the lower end. The pair of long spinnerets, so conspicuous in this and in other spiders of the family, are three-jointed, and have a power of free motion. In the words of Mr. Blackwall, the purpose subserved by them is the binding down with transverse lines, distributed by means of an extensive lateral motion, the threads emitted from the inferior mammulæ; by which process a compact tissue is speedily fabricated.

\* 2. *Agelena prompta*. The middle eyes of the front row are the smallest of all. The end eyes at each side are placed on a tubercle, and are the four largest. The maxillæ are rounded at the tip, gibbous, and lean towards the lip. The lip is nearly equal in length and in breadth, and is broadest at the base. The abdomen is rounded above, and overhanging. The cephalothorax is indented and has convergent wrinkles. The spinnerets are in a cluster.

The shield is brown, darkest in front, and a line of long hairs, pointing forward, runs down the middle. The abdomen is hairy, dark brown above, with a series of pale angles running down it, and the sides are pale brown. Below, the breastplate and abdomen are pale, the abdomen having a dark band down the middle.

The legs are brown; the lower claw has two teeth.

The female is  $\frac{1}{16}$  inch long.

This little spider is found under stones.

**\*\*** *The two upper foot-claws toothed, the lower plain.*

**\*\* 3. *Agelena elegans*.** (Plate VIII. fig. 2 ♂.) The middle eyes of the front row are the largest of all. The falces have a few very small teeth. The maxillæ are gibbous, and lean towards the lip. The lip is nearly equal in length and in breadth, rather broadest at base. The breastplate is broad. The abdomen is short and broad in the female, rather broader behind than before, round above, overhanging, and very hairy. The cephalothorax is indented, and has convergent furrows.

The shield is yellowish-red. The abdomen is very dark brown above, with a dark pattern, consisting of a pair of large oval black spots near the base, succeeded by a series of pale lines forming angles. The abdomen is paler brown below, and the breastplate is yellowish-red. The spinnerets are in a transverse row, the outer pair being the longest.



Fig. 22.  
Spinnerets of  
*A. elegans*.

The legs and female palpi are yellowish-red, and the palpal claw is plain. There is little difference in the length of the first, second, and third pairs of legs.

The female is  $\frac{1}{2}$  inch long.

The small web of this little spider is extended over holes in the earth, such as footprints of cattle, etc. The cocoon is formed in August. It is less than  $\frac{1}{4}$  inch in diameter, contains only five or six eggs, and is generally fastened to a leaf.

**\*\* 4. *Agelena montana*.** The middle eyes of the front row are the smallest of all. The end eyes on each side are placed close together on a tubercle, and are the four largest. The falces lean inwards. The maxillæ are gibbous, round at the tip, and lean towards the lip.

The lip is semicircular. The breastplate is broad. The abdomen is rounded above and overhanging. The shield is indented, and has convergent wrinkles.

The shield is glossy and brown. The abdomen is very hairy; it is blackish, faintly spotted with pale colour, and there is a series of pale angles on the hinder half. The abdomen is paler below than above. The breastplate is brown. The spinnerets are in a transverse row, the outer pair being much the longest.

The legs are brown and pale, banded; the female palpal claw is plain.

The female is  $\frac{1}{14}$  inch long.

This spider has been found under stones early in the year, and, later, amongst moss.

\*\*\* *Foot-claws two-toothed.*

\*\*\* 5. *Agelena nava*. The middle eyes of the front row are the smallest of all, and the four end-eyes are the largest. The maxillæ are rounded at the tip, and lean towards the lip. The lip is nearly equal in length and in breadth, but rather broadest at base. The abdomen is rather broader behind than before, rounded above and overhanging. The cephalothorax is indented, and has convergent wrinkles.

The shield is dark brown, darkest at the edges, and the abdomen is brownish-black. The spinnerets are in a transverse row, the outer pair being the longest.

The legs and palpi are dark brown.

The female is  $\frac{1}{15}$  inch long.

*Agelena nava* has been found running on the ground, and on railings, etc.

\*\*\* 6. *Agelena brunnea*. (Plate VIII. fig. 3 ♂.) The eyes are on black spots. Those of the front row

are larger than those of the hind, the middle front eyes being the largest of all. The maxillæ are round at the tip, and lean a little towards the lip. The lip is nearly equal in length and in breadth, but a little broadest at base. The abdomen is rather larger behind than before, rounded above and overhanging. The cephalothorax has convergent wrinkles.

The shield is reddish brown, with very dark edges, and fine dark lines forming acute-angled triangles placed obliquely on the sides. The abdomen is pale brown above, with a pattern down the middle formed of a series of dark angles. The sides are spotted or striped obliquely with dark colour, and have each a dark spot near the tip. Below, are three darkish stripes, and the breastplate is reddish-brown. The spinnerets are short.

The legs and female palpi are reddish-brown, and the palpal claw is toothed.

The female is  $\frac{1}{2}$  inch long.

The cocoon of *Agelena brunnea* is found in May. It is suspended, by a stalk, from a twig of heath or other plant, and is of white silk caked over with earth.

\*\*\* 7. *Agelena celans*. The middle eyes of the front row are much smaller than the rest. The four end-eyes are the largest. The maxillæ are round at the tip, and lean a little towards the lip. The lip is nearly equal in length and in breadth. The breastplate is short. The abdomen is rather broader behind than before, rounded above and overhanging. The cephalothorax is indented, and has convergent wrinkles.

The shield is dark brown, pale at the edges and down the middle. The abdomen is dark brown above, with a faint reddish-brown stripe, toothed at the sides, down the middle. The breastplate and under side of the ab-

domen are paler, the abdomen having three faint dark stripes.

The legs are hairy, and the first two pairs spinous. They are reddish-brown, palest at the upper end. The palpal claw is plain.

The female is  $\frac{1}{8}$  inch.

This spider is rare. It has been found under stones, and running on the ground.

\*\*\* 8. *Agelena gracilipes*. The front row of eyes is less curved than the hind, and its middle eyes are the smallest of all. The middle eyes of the hind row are rather wider apart than those of the front. The maxillæ are rounded towards the tip, and lean a little towards the lip. The lip is nearly equal in length and in breadth, but rather broader at base than at tip. The abdomen is rounded above and overhanging. The cephalothorax is indented and has convergent wrinkles.

The shield is dark brown at the sides, darker at the edges, and palish in the middle. The abdomen is dark brown or blackish above, with a faint paler squarish mark at the fore part, followed by a series of pale transverse curved lines. The breastplate and the abdomen below are yellowish, the latter being dark at the tip. The spinnerets are pale, and short.

The female is  $\frac{1}{10}$  inch long.

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9. *Agelena Hyndmanii*. (Plate VIII. fig. 4 ♀; Plate II. fig. 18, eyes.) The middle eyes of the front row are the smallest of all. The cephalothorax is much contracted towards the face, and rounded at the sides.

The shield is brownish-green, brownest towards the face, with oblique brownish patches on the sides. The abdomen is deep green, with a long toothed band of

light green coming to a point at the spinnerets, and containing in its fore part a shorter and broader dentated and pointed dark band. The abdomen is grass green below, and the breastplate is greenish-brown, dark at the edges. The spinnerets in a cluster.

The legs are hairy and spinous, greenish-brown and ringed.

The female is  $\frac{1}{6}$  inch long.

#### Genus II. TEGENARIA.

*Eyes.* In two rows. The front row nearly straight; the hinder forming a crescent, with its ends towards the face. The four middle eyes form a nearly square figure\*, or those of the hind pair are wider apart than those of the front.\*\* Not very different in size. (Plate I. fig. 19, *T. civilis*.)

*Falces.* Conical, with two rows of teeth or none.

*Maxillæ.* Long, straight, rounded on the outer, and cut aslant on the inner side of the tip, which is wider than the base.

*Lip.* Nearly equal in length and in breadth, notched at the tip.

*Legs.* Thin and very long.

*Claws of feet* 3. All toothed, or the two upper toothed and the lower plain.

*Cephalothorax.* Broader behind than before, contracted towards the face.

*Abdomen.* Egg-shaped, rounded above and overhanging the cephalothorax.

*Breastplate.* Heart-shaped.

*Spinnerets.* One pair longer than the rest.

*Length of female* from near  $\frac{3}{4}$  to  $\frac{1}{8}$ . *Male* rather smaller.

\* *Middle eyes forming a nearly perfect square.*

\* 1. *Tegenaria domestica*. (Plate VIII. fig. 5 ♀.) The front row of eyes is nearly straight. Each pair of end eyes is on a tubercle. The falces are hairy, and have two rows of teeth. The breastplate is broad and pointed behind. The cephalothorax is indented and has convergent wrinkles.

The shield is clothed with pale hairs. It is pale reddish-brown, darkest in front, with a long uneven blackish band down each side, and one similar on each edge. Down the abdomen runs a reddish-brown band, pointed at the spinnerets. This lies between two irregular black bands, on which are large yellow spots, largest on the fore part. The breastplate is hairy. It is reddish-brown, with a dark stripe on each side, on which are several reddish-brown spots. The abdomen is yellowish-brown below and on the sides, spotted and streaked with blackish colour. Two yellowish lines run along the under side.

The legs are long, especially in the male, thin, hairy and spinous, reddish-brown, ringed. In the female the order of length is 1 4 2 3, and the fore leg is about  $1\frac{1}{2}$  inch long. In the male, though the animal is smaller, it is sometimes upwards of  $2\frac{3}{4}$ ; and the order of length is 1 2 4 3. The female palpal claw is toothed:

The female is  $\frac{5}{8}$  inch. The male is smaller and darker than the female.

This and *Tegenaria civilis* are spiders with whose work we are all familiar. Pope, describing a country-house, ironically says, "In most of these rooms there are hangings of the finest work in the world, that is to say, those which Arachne spins from her own bowels."



With this, too, Spenser tapestries the gilded vault of the cave of Mammon :—

“ And ouer them Arachne high did lifte  
Her cunning web, and spred her subtile nett,  
Enwrapped in fowle smoke and clouds more black than iett.”

This foul state of the web appears to be a character, and not an accidental circumstance ; and the cocoons are invariably garnished in this, as in some other species of this family, with bits of plaster, whitewash, and such substances. The web is large, of close texture, horizontal, and usually placed in the corners of the inside of old buildings, etc. It is attached by its edges, and additionally supported by threads from both surfaces, attached to near objects. A tubular hiding-place, open at both ends, is connected with the web, and is generally placed in the angle of the walls. There are several cocoons, formed in May, of flattish form, and upwards of  $\frac{3}{4}$  inch in diameter.

The web of this spider is evidently looked upon as a valuable property, and, if the owner of one be killed or removed, a younger spider, or one possessing an inferior web, immediately takes possession of that which is deserted. Goldsmith, in a paper in the ‘Bee,’ has given an amusing history of a house-spider which he watched for three years.

\* 2. *Tegenaria atrica*. The front row of eyes is nearly straight, and its middle eyes are rather larger than the other six. The pairs of end eyes are on tubercles. The falces are hairy, and have two rows of teeth. The cephalothorax is indented, and has convergent wrinkles.

The shield is very hairy. It is pale brown, with a short dark line on the fore part, an uneven and inter-

rupted dark band on each side, and dark edges. The abdomen is hairy, and has a pale line down the middle, from each side of which run short oblique pale lines, each ending in an irregularly-shaped spot. This pattern lies on blackish blotches. The sides are yellowish-brown, spotted with black. The under side of the abdomen is yellowish-brown, with two bands of dark spots down it. The end joint of the pair of long spinnerets is reddish-brown, the middle joint black. The breastplate has a tapering reddish-brown mark down the middle, with a curved dark band on each side, on which are round reddish-brown spots opposite the legs.

The legs are long, hairy, reddish-brown, and greenish on the thighs. They are spotted below. In the female the order of length is 4 1 2 3, and the hind leg is  $1\frac{1}{4}$  inch long. In the male the order is 1 4 2 3, and the fore leg is nearly 2 inches long. The lower claw has several teeth. The palpal claw of the female is toothed.

The female is more than  $\frac{3}{4}$  inch. The male is smaller and paler.

This spider is found in houses, greenhouses, etc. The web is after the usual type of the *Agelenidæ*. A curious incident is related by Mrs. Collings, of Serk, as occurring under her own observation. A *Tegenaria atrica* attacked an ant, into the body of which he plunged his poison fangs. On doing this, however, he immediately recoiled showing signs of distress, left the ant, which which was not dead, and, running to an earthen flower-pot, seized the edge between his fangs, and remained for a considerable time in this position. At length the spider relinquished his hold, leaving on the porous surface of the pot a wet blotch more than half an inch in diameter, went back, and finished killing the ant. The

inference of the observer was, that the spider had imbibed, and was distressed by, some of the formic acid with which the bodies of ants abound, and that he had recourse to this absorbent substance to obtain relief.

The relative length of the legs in both sexes serves as an easy distinction between this and the preceding species.

*\*\* The middle eyes of the hind row wider apart than those of the front.*

**\*\* 3. *Tegenaria civilis*.** (Plate I. fig. 19, eyes.) The front row of eyes is nearly straight, and its middle eyes are the smallest of all. Each pair of side eyes is on a tubercle. The falces are hairy, and have two rows of teeth. The lip is rather longer than broad.

The shield is reddish-brown, with dark edges, and a dark uneven stripe down each side. The abdomen is pale greenish-brown, with a row of triangular dusky spots down the middle, and oblique rows or patches of spots on the sides. The breastplate is reddish-brown, with dark rings near the legs. The abdomen is pale yellowish-brown below, with three faint dusky stripes.

The legs are long, thin, hairy and spinous, reddish-brown, ringed on the thighs, the rings being very faint in the male. The order of length is 4 1 2 3. The lower claw has a pair of fine teeth. The female palpal claw is toothed.

The female is very little less than  $\frac{1}{2}$  inch.

In habits, form of web, etc., this spider resembles *T. domestica*, but her cocoons are much smaller, being less than  $\frac{1}{3}$  inch in diameter. It is known to moult nine times, and to live four years, the female producing many broods.

**\*\* 4. *Tegenaria silvicola*.** Both rows of eyes are slightly curved. The middle eyes of the front row are the smallest of all. The falces lean towards the breast-plate. The lip is rather broader at the base than at the tip. The cephalothorax is indented and wrinkled.

The shield is pale brown, dark at the edges, and obliquely striped on the sides. The abdomen has a yellowish patch on the middle, which is surrounded by an irregular zigzagged dark brown border, from the fore part of which a pointed streak proceeds a little way into the yellow patch. Outside this border the abdomen is yellowish and brown mottled. The lower side is yellowish, with three faint dark stripes, and the breastplate is brown.

The legs are hairy, and have two rows of spines on the two first pairs. The order of length is 4 1 2 3.

The female is  $\frac{1}{8}$  inch.

### Genus III. CÆLOTES.

*Eyes.* In two nearly straight rows. The two middle eyes of the front row are the smallest of all, and those of the hind row are rather wider apart, and are the largest of all. Each pair of end eyes is on a tubercle. (Plate I. fig. 20, *C. saxatilis*.)

*Falces.* Triangular and very prominent, fringed with hairs; armed with two rows of teeth.

*Maxillæ.* Enlarged at the insertion of the palpi, and at the tip, which is fringed with hairs, rounded on the inner and cut aslant on the outer side. They curve towards the lip.

*Lip.* Rather oval; cut straight at the tip.

*Legs.* Thick. Order of length 4 1 2 3.

*Claws of feet.* Three. All toothed.

*Palpal claw.* Toothed.

*Cephalothorax.* Nearly equal in breadth throughout, contracted towards the face, which is wide, indented, and wrinkled.

*Abdomen.* Oval. Broadest behind, and overhanging.

*Breastplate.* Heart-shaped, with small eminences on the sides, opposite the legs.

*Spinnerets.* The upper pair much longer than the rest.

*Length of the female a little over  $\frac{1}{2}$  inch. The male smaller.*

*Cœlotes saxatilis.* (Plate VIII. fig. 6 ♀; Plate II. fig. 20, eyes.)

The shield is reddish-brown, darkest on the face. The abdomen is yellowish-brown, with a black stripe down the middle, with oblique lines of yellow colour running up into it from the sides, and sometimes altogether dividing it. The sides are spotted with black. The under side of the abdomen is yellowish-brown, with a few very small black spots. The breastplate is dark reddish-brown.

The legs are hairy, spinous, and dark reddish-brown. The lower foot-claw has two pairs of teeth.

#### Genus IV. TEXTRIX.

*Eyes.* In two curved rows, with the ends of the crescents pointing backwards. The front row is the shortest, is only slightly curved, and is composed of the four smaller eyes, the middle pair being the smallest of all. The hind row is much curved, and is composed of four large eyes, wide apart, the middle pair being the largest of all. (Plate II. fig. 21, *T. lycosina*.)

*Falces.* Conical, with a few teeth, and leaning towards the breastplate.

*Maxillæ.* Curved towards each other, large and rounded at the tip.

*Lip.* Large; nearly equal in length and in breadth.

*Legs.* The fourth pair longest, the rest nearly equal to each other.

*Claws of feet.* Three; all toothed.

*Palpal claw* of female toothed.

*Cephalothorax.* Long, contracted towards the face, indented and wrinkled.

*Abdomen.* Egg-shaped, rounded above and overhanging.

*Breastplate.* Heart-shaped.

The upper pair of spinnerets very long.

*Length of female less than  $\frac{1}{8}$  inch. The male is less.*

*Textrix lycosina.* (Plate VIII. fig. 7 ♂; Plate II. fig. 21, eyes.)

The shield is blackish, with a line of pale hairs running down the middle, and long black hairs on the face.

The abdomen is black above, with a long pointed pale patch, on which are two pairs of large black spots, succeeded by some small ones. The sides are mottled with pale colour. The abdomen is reddish-brown below, with black and pale spots. The breastplate is blackish.

The legs are hairy and very spinous, pale, with dark rings. The lower claw has two pairs of teeth.

The eyes of the *Textrix lycosina* bear some resemblance to those of the *Lycosæ*, whence its name. The snare is, after the type of the family, a horizontal sheet of web, connected with a tubular hiding-place. The eggs are concealed near this, the cocoon being usually attached to the under side of a stone, and slightly plastered with earth, etc. It is white, flattened, and about  $\frac{1}{4}$  inch in diameter.

## FAMILY VIII. THERIDIIDÆ.

## Genus I. THERIDION.

*Eyes.* In two rows, curving towards each other at the ends. The side eyes are usually on tubercles. The middle eyes are equidistant, forming a square \*, or those of the front and hind pair are not at the same distance from each other \*\*. Plate I. fig. 22 *a*, *T. lineatum*; *b*, *aurantium*; fig. 23, *signatum*.)

*Falces.* Generally conical. With or without teeth.

*Maxillæ.* Long, leaning towards each other. The tip cut off aslant on the outer side.

*Lip.* Short.

*Legs.* More or less long and slender. Order of length usually 1 4 2 3 or 4 1 2 3.

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Cephalothorax.* Usually prominent in front, where the eyes are situated.

*Abdomen.* Overhanging the cephalothorax, round or angular, sometimes bearing appendages, sometimes notched in front.

*Breastplate.* Heart-shaped.

*Length of female, from  $\frac{1}{4}$  to  $\frac{1}{16}$  inch. The male is smaller.*

In this genus, as has before been remarked, the snares are composed of fine threads, crossing each other in all directions. These are spun on bushes, in tall grass, and amongst other plants; and, however irregular may be the appearance of the snare at first sight, it will be found that the general form is constant in each

species, whilst in certain species peculiar and interesting points of economy may be observed. The *Theridia* are remarkable for their pacific disposition, the male dwelling safely, it is said, in the same nest with the female, and the young remaining together, and with their mother, for a considerable time after their exclusion from the egg. The *Theridia*, like the *Epëiræ*, usually bind their prey with silken threads, before attempting to feed upon it.

\* *The four middle eyes form a square. The end eyes are on a tubercle, near together or in contact.*

a. *The two front middle eyes the smallest.*

b. *The two front middle eyes the largest.*

c. *All the eyes nearly equal in size.*

\* a. 1. *Theridion lineatum*. (Plate IX. fig. 1 ♀, 1. a.; 1 b, ♀, var.; Plate II. fig. 22 a, eyes.) The eyes are on black spots; the lateral eyes are not in contact. The falces have a few teeth, and a short fang in the female. In the male they are widely separated. The basal half is long and thin, with a long point or tooth growing up from near the bottom on

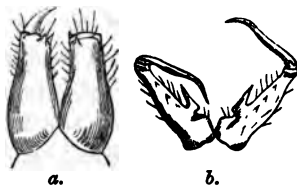


Fig. 23.—Falces of *T. lin.*: a ♀, b ♂.

the under side, and the fang is long, slender, and crooked. The lip is semicircular. The abdomen of the female is very large, nearly globular, pointed behind, and very high above. That of the male is much more slender. The dent of the cephalothorax is large.

This spider is ordinarily of a pale greenish or yellowish-white, but there are varieties with crimson markings. The shield is glossy, has a darkish stripe down the



middle, and fine black edges. The abdomen is slightly hairy, a fine black branching line runs down the middle, and two lines of small black pits are on each side. There are four black and white spots at the tip. Below, the abdomen is black down the middle. The breastplate has a black line down the middle, and black edges. When there is crimson painting in this spider, it occurs either as an oval patch on the abdomen, or as a line enclosing an oval space.

The legs are long, especially in the male, thin, and yellowish-green; the front pair have one black ring about the middle (which distinguishes this species), and the fore leg is nearly twice the length of the third. The order of length 1 4 2 3. The palpal claw is toothed.

The female is  $\frac{1}{2}$  inch long. The male less.

This spider is common. The cocoon is formed in July, and is round,  $\frac{1}{4}$  inch in diameter, and bluish or greenish-blue in colour. This is loosely covered with silk, and fastened to the lower side of a leaf, the edges of which are bound together, so as to protect it.

\* *a. 2. Theridion carolinum.* The eyes are all on a prominence. The two front middle eyes are more prominent than the rest, and the two hind middle are the largest of all. The lateral eyes are in contact. The jaws are pale, with a brown spot. The lip is semicircular. The breastplate has projections on the sides near the legs. The abdomen is nearly globular and pointed at the tip in the female. In the male it is more slender, and curves down behind. The cephalothorax is contracted towards the face, and indented.

The shield is glossy, reddish-brown, and has a pale uneven spot on each side. The abdomen of the female is reddish-brown, with a pale yellow patch on the upper side,

which is pointed behind. In the male, the abdomen is almost black, the yellow patch smaller and cut across into two portions.

The legs are thin and long, especially in the male, pale, hairy, and spinous. The order of length is 1 4 2 3, the first pair being twice the length of the third. The palpal claw of the female is toothed.

The female is  $\frac{1}{10}$  inch.

This spider is very rare, and is remarkable for carrying her cocoon attached by threads to her person, as is usual amongst the *Lycosæ*, but not amongst the snare-making spiders. The cocoon is formed in June. It is round, white, and  $\frac{1}{10}$  inch in diameter.

\* *a. 3. Theridion versutum.* The female is not yet described. The two front middle eyes are the darkest, and are prominent. The lateral eyes are in contact. The lip is semicircular. The abdomen is egg-shaped, and rounded above. The cephalothorax is indented, and a little contracted towards the face.

The shield is glossy and brown. The abdomen is black above, with a curved transverse white mark on the fore part, succeeded by a series of transverse white markings, and has a line of small white spots down each side. The abdomen is yellowish below, with black speckling. The breastplate is yellowish-brown.

The legs are pale in colour, long, thin, and hairy. The order of their length is 1 4 2 3.

The male is nearly  $\frac{1}{4}$  inch long.

b. *The two front middle eyes largest.*

\* *b. 4. Theridion quadripunctatum.* (Plate IX. fig. 3 ♀.) The lateral eyes are oblique, and not quite in contact. The falcæ have a few teeth. The maxillæ

are enlarged at the insertion of the palpi. The lip is semicircular. The abdomen is a short egg-shape, a little flattened above. The cephalothorax is indented and a little contracted toward the face.

This spider varies in its markings, but it is usually easy to recognize without minute examination, being glossy, of a rich dark brown colour, with a curved transverse white line, formed of minute spots, on the fore part of the abdomen, and another line of the same kind reaching from the middle of this crescent down the abdomen towards the spinnerets. There are other less conspicuous markings, and two rows of pits down the abdomen, four of which are more conspicuous than the rest. Sometimes the upper side of the abdomen is a lighter brown than the rest. The under side of the abdomen is darkest down the middle.

This spider is found in cracks in walls and other such places, and sometimes running on the wall in houses. The cocoon is formed in June. It is round, yellowish-white, and rather more than  $\frac{1}{2}$  inch in diameter. The eggs are tinged with pink. *Theridion punctatum* has a habit similar to that of *Pholcus* (see *Pholcus*) of agitating itself and its snare by a violent muscular action in the legs.

\* *b. 5. Theridion sisyphum.* The two front middle eyes are the darkest. The lateral eyes are oblique, and nearly in contact. The lip is semicircular, and the breastplate has projections on the sides near the legs. The abdomen is extremely large, very high above, and pointed at the tip. The cephalothorax is a little contracted towards the face, and the dent is large.

The shield is shining, reddish-brown in the female, very dark in the male. The abdomen is slightly hairy.

In the male it is black; in the female it is marked above with red, black, and white crescent lines, streaks, and spots. From the base to the middle is a dark mottled band; between two pale longitudinal lines from a point near the end of these, two curved pale lines run backwards, enclosing a pair of pale spots on a black ground, behind which are two slanting lines. The hinder part of the abdomen is reddish. The sides of the abdomen are reddish and black. Below, it is dark; the gills are reddish-brown, with a pale spot near each, and the breastplate is reddish-brown, paler than the shield.

The legs are hairy, pale, and faintly ringed. The order of length is 1 4 2 3. The palpal claw is toothed.

The female is  $\frac{1}{8}$  inch. The male much smaller.

The snare of *Theridion sisypum* is large and slight, and the cocoon, or cocoons, which are reddish-brown and of a flattened shape, are formed in June, and sheltered in a silken tent which hangs in the snare, and is sometimes strengthened by the introduction of dried leaves and other extraneous matter.

This spider chiefly inhabits large trees, but is found in other situations. It greatly resembles *T. riparium* in appearance, but differs entirely in the form of cell, and is of a rather larger size.

\* *b. 6. Theridion tepidariorum.* The two front middle eyes are the darkest. The lateral eyes are in contact. The lip is semicircular. The breastplate has projections near the legs. The abdomen is very large, much rounded and high above, and pointed at the tip. It is smaller in proportion in the male. The cephalothorax is slightly contracted towards the face, and the dent is large.

The shield is glossy and dark brown. The abdomen

slightly hairy, pale above; down the middle runs a brown or black pattern, the hinder half of which consists of several transverse lines. On the sides, which are pale and spotted with black, is a long, irregular, deeply cut, and waving brown or black mark. The abdomen is blackish below, with two pale mottled spots near the gills. The breastplate is dark brown.

The legs are long, hairy, and pale, with dark rings. The order of length in the female is 1 4 2 3. In the male, 1 2 4 3.

The female is  $\frac{1}{4}$  inch. The male much smaller.

This is probably a foreign species, as it has hitherto, both in England and in Germany, been found only in conservatories.

There are several cocoons, which vary in size, and are of a reddish-brown colour and a balloon shape. They are formed in July and later.

\* *b. 7. Theridion nervosum.* (Plate IX. fig. 4 ♀.) The two middle eyes are the darkest. The lateral eyes are oblique, and nearly in contact. The lip is semi-circular. The abdomen is pointed at the tip, nearly globular in the female, and more slender in the male. The cephalothorax is a little contracted towards the face, and the dent is large.

The shield is glossy and yellowish, dark brown at the sides and down the middle. The abdomen is glossy, with regular and richly contrasted red-brown, white, and black markings. Down the middle are several red-brown marks, enclosed in white borders, and on each side are black or dark-brown marks similarly enclosed. Individuals differ in depth of colouring, and the young are pale and chiefly of a dull greenish or greenish-brown hue. The abdomen is yellow-

ish or greenish below. On the fore part is a blackish angular mark, and there is a black spot near the spinnerets. The breastplate is yellowish, with pale reddish-brown edges.

The legs are hairy, pale, and ringed. The order of length is 1 4 2 3. The palpal claw is toothed.

The female is  $\frac{1}{8}$  inch long.

This beautiful little spider and her as beautiful snare and nest, are to be easily found in almost any kind of bush or shrub in June or July. The snare is, like that of other *Theridia*, a very light mass of threads crossing each other in every direction, and altogether forming a pyramidal figure, or rather that of a long cottage roof. The nest is a perfect little tent, which is sometimes suspended by itself in the middle of the snare, and sometimes is sheltered under a growing leaf, which has been fastened by silken cords into a dome-like form to serve as roof. The tent is lined with white silk, and is covered with small dead leaves or flowers, or the stamens of larger flowers, or with anything which has presented itself, and is decorated with the wings and other parts of insects, as the wigwam of an Indian with scalps and other war-trophies. It is remarkable how often, where the insect is not uncommon, the beautiful wing-cases of the green nut-weevil are found amongst these ornaments. Within this tent is the little round green silk cocoon, containing the eggs, and the mother is almost always to be found in an inverted position embracing this treasure, and hiding it with her body, which it about equals in size. When the young are hatched, they live with their mother in this tent until they are able to make their own living.

\* *b. 8. Theridion pictum.* (Plate X. fig. 1 ♀.) The two middle eyes of the front row are the darkest, and

the lateral eyes are oblique and in contact. The lip is semicircular. The breastplate is long, and has very small projections near the legs. The abdomen is a short broad egg-shape in the female, more slender in the male. The cephalothorax is contracted towards the face, has convergent wrinkles and a large dent.

The shield is glossy. It is yellowish-brown, with dark sides and an irregular dark mark down the middle. The abdomen is slightly hairy. A large red band, wide in front, toothed at the sides, and pointed behind, runs down the middle. This band is outlined with yellow, beyond which the abdomen is speckled dark brown. The sides are pale and speckled. Below, the abdomen is blackish, and the gills are yellow. The breastplate is glossy yellowish-brown, with dark sides.

The legs are very long. The first pair is twice the length of the third. The order of length is 1 4 2 3. The legs and female palpi are pale, with dark rings. The palpal claw is toothed.

The female is less than  $\frac{1}{4}$  inch.

\* *b. 9. Theridion denticulatum.* (Plate IX. fig. 5 ♀, 5 a ♂.) The two middle eyes of the front row are the darkest. The lateral eyes are oblique and in contact. The falcæ are streaked with dark colour. The maxillæ lean very much towards each other. The lip is triangular. The abdomen is large and nearly globular in the female, more slender in the male, in which it has a transverse wrinkle on the under side. The cephalothorax is short, contracted and small towards the face, and has convergent wrinkles and a dent.

The shield is dark brown. The abdomen of the female has a broad pale band, edged with dark brown, deeply toothed at the sides and pointed at the spinnerets,

running down the middle. This sends out oblique lines of pale spots. The sides of the abdomen are pale, and speckled or mottled with white. In the male the abdomen is darker. Individuals of this species vary in the depth of their colouring. The abdomen is blackish below, with a pale spot near the tip and two at the gills, which are also pale. The spinnerets are pale brown. The breastplate is dark brown.

The legs are hairy and spinous; they are pale, with dark rings. The order of length is 1 4 2 3. The front leg is nearly twice the length of the third. The female palpal claw is toothed.

The female is  $\frac{1}{8}$  inch.

The cocoon is round, of a greenish-brown colour, and contains brown eggs. It is less than  $\frac{1}{8}$  inch in diameter, and is attached to some object near the nest of the spider, which is usually woven in crevices of walls or amongst the foliage of plants trained over them. The cocoon is formed about midsummer.

\* *b. 10. Theridion simile.* The two middle eyes of the front row are the darkest. The lateral eyes are oblique and in contact. The lip is somewhat semicircular, but rather pointed. The breastplate has projections near the legs. The abdomen is large, almost globular, and pointed behind. In the male there is a conspicuous dark transverse fold on the under side. The cephalothorax is small, dented, and has convergent wrinkles.

The shield is dark brown, darkest down the middle and on the edges. The abdomen is freckled, yellowish-white, with a dark brown patch, which is broad before and pointed behind, down each side of the upper part, leaving a toothed pale band in the middle, wide and triangular in front and pointed behind. On this is an



interrupted brown line. The male is darker than the female. On the under side of the abdomen a dark curved line runs from each gill to near the spinnerets, where there is a dark patch. The gills are dark reddish-brown. The breastplate is reddish-brown, dark at the sides.

The legs are rather long and thin; they are hairy, and pale with dark rings. The order of length is 1 4 2 3, and the front leg is twice the length of the third. The palpi of the female are dark at the tip, and their claw is toothed.

The female is  $\frac{1}{16}$  inch.

\* *♂. 11. Theridion varians.* (Plate X. fig. 2 ♀.) The middle eyes of the front row are the darkest. The lateral eyes are in contact. The falces and maxillæ have each one dark spot, and in the male the falces are gibbous. The lip is triangular. The abdomen is large and nearly globular in the female, much smaller and more slender in the male, which has a conspicuous transverse fold on the lower side. The cephalothorax is short, wide behind and rather pointed before in the female, larger in proportion in the male, and roundish, being broadest in the middle.

The shield is yellowish-white, with black at the edges and down the middle, and has a black spot in front. Down the abdomen, which is glossy, runs a reddish-brown band, which is deeply toothed at the sides, pale at the ends and edges, bears a few black lines, and has a broad, toothed, dark brown border. On the fore part of the abdomen is a black crescent-shaped line. The sides are brown, speckled with yellow. Below, the abdomen is yellowish-brown, with three blackish spots. The breastplate is pale yellow, with black sides.

The legs are long, thin, clear, and pale with black

rings. The order of length is 1 4 2 3. The first pair in the female is twice the length of the third. The palpal claw is toothed.

The female is  $\frac{1}{8}$  inch long.

This spider, like *T. denticulatum*, is found in the shrubs growing upon walls, or in the crevices of the walls themselves. There are several cocoons, which are round, white, frequently have extraneous substances on their surface, and are more than  $\frac{1}{8}$  inch diameter. They are formed in July.

\* *b. 12. Theridion tinctum.* The eyes are on black spots. Those in the middle of the front row are the darkest, and the lateral eyes are near to, but do not touch, each other. The falcies have a few very small teeth, and are streaked. The lip is triangular, with a rounded tip. The abdomen is large and rather globular in the female, very much smaller in the male. The cephalothorax is contracted towards the face, and is indented.

The shield is yellowish-white, spotted with black at the edges, and has a black line across the face; and, down the middle, a dark mottled streak, wide in front, where it bears the hind row of eyes, and pointed behind where it reaches the dent. The abdomen is pale yellow. On the fore part is a black crescent, with a point in the middle. Behind this are two large black spots, sometimes united, which are followed by two lines of smaller spots or blotches, which run to the spinnerets, and send out oblique streaks to the sides. Between these are some oblique dark lines, meeting in pairs in the medial line. The breastplate is whitish, spotted with black at the sides, and has a black line reaching from near the lip to the hinder end. Below the abdomen there is a dark spot between the gills and the base, and another rather

lower down, with a small slanting dark line on each side of it, and two small dark lines are near the spinnerets. The gills are yellowish, with red-brown between.

The legs are long, thin, hairy, and spinous. The order of length is 1 2 4 3, the first pair being in the female twice the length of the third, and three times as long as the body of the spider. In the male they are still longer in proportion. The relative length of the legs is a useful distinction in this genus. The legs and female palpi are very pale, with black spots and rings, and the palpal claw is toothed.

The female is  $\frac{1}{10}$  inch.

\* *♂*. 13. *Theridion pulchellum*. The two middle eyes are the darkest, and those of the lateral pairs are in contact. The falcies have a few teeth. The lip is nearly semicircular. The breastplate has prominences near the legs. The abdomen is rather large in the female, and overhangs the cephalothorax much; it is smaller in the male. The cephalothorax is oval, and has a large dent.

The shield is yellowish-brown with a greenish tinge, narrow black edges, and a broad black stripe down the middle. Down the abdomen are two long pale-yellow bands, toothed externally, and enclosing a wavy-edged stripe of dark reddish-brown. The sides are rather lighter in colour than the middle. The male is a little darker than the female. Below, the abdomen is greenish-yellow, with a broad, dark reddish-brown stripe down the middle. The breastplate is pale down the middle, and has black sides. The gills are yellow.

The legs are long, especially in the male, hairy, yellowish-brown, and ringed. The order of length is in the female 1 4 2 3; in the male, 1 2 4 3.

The female is  $\frac{1}{8}$  inch long.

The cocoon is round, white, and  $\frac{1}{8}$  inch in diameter. It is formed in June.

\* *b.* 14. *Theridion stictum*. The middle eyes are the darkest; the lateral are oblique and in contact. The maxillæ lean much towards each other. The lip is semicircular; the breastplate broad. The abdomen is nearly globular, and overhangs the cephalothorax much. The cephalothorax projects in front.

The spider is glossy. The shield is covered with prick-like markings, and is very dark. The abdomen is yellowish-brown, with a crescent in front and line down the middle of rather paler colour, two dark spots in front, and dark sides. Below, the abdomen is yellow-brown, with a broad dark stripe down the middle. The breastplate, which, like the shield, is marked with pricks, is nearly black. The spinnerets are pale, and are included in the dark stripe.

The legs are short, thin, hairy, and reddish in colour. The order of length in the female is 1 4 2 3. The palpal claw is plain.

\* *b.* 15. *Theridion inornatum*. (Plate X. fig. 3. ♀) The middle eyes of the front row are very prominent, and are the darkest. The lateral eyes are oblique and in contact. The lip is semicircular. The abdomen is a broad egg-shape, round above. The cephalothorax is small, very prominent in front, especially in the male, and has a small dent.

The shield is yellowish-red, dark at the edges. The abdomen is blackish; sometimes it is yellowish-brown. The breastplate and gills are reddish-brown, and the spinnerets are pale.

The legs are hairy, and not very thin. They are reddish, with dark brown in the middle of the first, second,

and fourth pairs. The order of length is 1 4 2 3. The female palpal claw is toothed.

The female is  $\frac{1}{14}$  inch.

\* c. *All the eyes nearly equal in size.*

\* c. 16. *Theridion riparium*. The two middle eyes of the front row are prominent; the lateral eyes are oblique and in contact. The falcies are without teeth. The lip is squarish. The abdomen is large, very much rounded above and pointed behind. The cephalothorax is contracted towards the face, and the dent is large.

The shield is glossy and dark reddish-brown. The abdomen is slightly hairy, reddish-brown above, with black-and-white mottling crossed by a white line, which is broken in the middle by a black spot. This is followed by a black crescent line crossing the hind part of the abdomen. The male is much darker than the female, and not so clearly marked. Below, the abdomen is blackish, with a red-brown stripe crossing it near the spinnerets. The gills are reddish-brown.

The legs are yellowish-brown, with broad reddish-brown rings. The order of length is 1 4 2 3.

The cell of this species is peculiar, and somewhat resembles the case of a gigantic caddis-worm. It is a slight silken tube, sometimes as much as two inches and a half long, largest at the lower end, where it is open. Earth, stones, and dead leaves, etc., are woven into its texture, and it contains several yellowish-white cocoons. These are round, and about  $\frac{1}{8}$  inch in diameter. This cell is formed in August, and is suspended in a snare of the usual type.

\* c. 17. *Theridion pallens*. (Plate X. fig. 4 ♀.) The two middle eyes of the front row are prominent. The

lateral eyes are oblique and in contact. The falces are without teeth. The lip is rather triangular. The abdomen of the female is almost globular, and overhangs the cephalothorax much. In the male it is more egg-shaped. The cephalothorax is rather contracted towards the face, and indented.

The female is pale, nearly white. The shield has a brown mark down the middle, and the abdomen is faintly mottled. Before the eggs are laid there is a large brown blotch on the fore part, which is partially divided in the middle, and there is a faint darkish stripe over the spinners, but the marks of this species vary. The abdomen has two oblique greenish stripes on the lower side, and the breastplate has a greenish shade. In the male, which is smaller, the shield is yellowish-brown, and the dark medial band is shorter and darkest at the edges. The abdomen is blackish above; the sides are pale yellow, palest in front; below it is pale yellow, and the gills have a dark line round them.

The order of length in the legs of the female is 1 4 2 3; of the male 1 2 4 3.

The female is  $\frac{1}{14}$  inch long.

The cocoon, which is larger than the spider herself, is white, of a close fine texture, and somewhat pear-shaped, with several little points projecting from its surface. It is formed in June, and is found on shrubs and bushes, on heaths, or near woods. A specimen of *Theridion pallens* afforded an instance of the regularity with which the architectural laws of the genus are observed even in unusual circumstances. The little delicate white cocoon, with its still more minute owner, had been brought in-doors, and placed on a leaf lying



Fig. 25.  
Cocoon of  
*Theridion*  
*pallens*,  
enlarged.

on a small square of insect-setting cork, in which two pins had been left standing upright about an inch and a half apart, with a pointed strip of card projecting from one of them. Soon after, the cocoon and spider were missed from the leaf, and were found suspended in the air in the following manner:—

The little creature had drawn three horizontal lines from the head of one pin to that of the other, so forming, as it were, the ridge of the roof-shaped snare of the species. From each pin's head two lines were then drawn obliquely downwards and outwards, and attached respectively to a corner of the cork, the point of the strip of card, the stalk of the leaf, and its tip. This completed the skeleton, or rather the rafter framework of the edifice, which was then filled up with lines of almost inconceivable fineness intersecting each other in every direction. The little mother had suspended her cocoon, and when discovered was busily at work elaborating her snare, in entire content at having formed one as perfect and as regular according to the laws of her kind, as if she had had unrestrained choice of place and circumstance.

Well might an ancient philosopher\* select this animal in proof that "Nature teacheth euerie liuing thing." "Seest thou how no mortal Creature can imitate the Spider's Webbe? What cunning she hath in disposing her threds! . . . This Art is borne with the Spider and not learned. Thou shalt see that the Spider's webs are all alike; that the hiues wherein the Bees rest haue entrances alike. That which Art teacheth is vncertaine and vnequall, but that which Nature teacheth is alwaies vniforme."

\* Seneca, Ep. cxxi.

\* *c.* 18. *Theridion hæmatostigma*. The abdomen is egg-shaped. The cephalothorax is rather contracted towards the face.

The shield is pale brown, dark at the edges, and with dark lines radiating from the centre: sometimes it is reddish. The abdomen is hairy, and dark grey or blackish. A pale line runs from base to tip, on each side of the fore half of which is a red spot. From the lower half of the line several short pale lines branch out on each side. Below, the abdomen is glossy, and of a greyish colour, surrounded by a black-edged white line. The breastplate is glossy, and red or orange-coloured.

The legs are long, hairy, and pale.

The female is about  $\frac{1}{12}$  inch long.

\* *c.* 19. *Theridion albens*. The eyes are on black spots. The lateral eyes are oblique and in contact. The falcæ are without teeth. The lip is triangular and pointed. The abdomen is very much rounded above, and overhangs the cephalothorax much. The cephalothorax is glossy, contracted towards the face, and indented.

This spider is nearly white; a faint blackish mark runs down the shield, and near the middle of the abdomen fine black long oval rings, placed obliquely or transversely.

The legs are hairy. The order of length is 1 4 2 3. The palpal claw is plain.

The female is  $\frac{1}{16}$  inch; the male is not described.

\* *c.* 20. *Theridion variegatum*. The eyes are on black spots. The two middle eyes of the front row are prominent; the lateral eyes are in contact. The falcæ have a few small teeth. The maxillæ are pointed, and curve round the lip meeting it. The lip is triangular.



The breastplate is long. The abdomen is broad, very round above, and rather pointed behind. There are two tubercles on the upper side. The cephalothorax is high, but slopes suddenly behind; it is indented, and bears a row of curved hairs down the middle.

The shield is pale with black edges; a triangular black spot is on each side of the fore part behind the eyes; two triangular spots are seated in the middle of the shield, from the foremost of which a line runs to the eyes. The abdomen has a few long hairs. The front half is chiefly black or blackish, and the hind half red with black transverse lines and white spots. The tubercles occur where the black and red meet; their fore side is black, and the hinder whitish. The breastplate is light reddish-brown, with dark marks on the edges. The gills are yellow.

The legs are long, thin, and spinous, and, with the palpi of the female, are pale with dark rings. On the front of the lower joints of the two first pairs is a series of curved spines. The order of length is 1 4 2 3. The palpal claw is toothed.

The female is  $\frac{1}{8}$  inch.

The cocoon of this species is rather pear-shaped, and is suspended by a slender stalk to the under side of stones, rocks, etc. The envelope is double, an inner sac being formed of soft pale-brown silk loosely woven, and enclosed in a coarse covering of dark reddish-brown threads, which unite and form the stalk. The diameter of the cocoon is about  $\frac{1}{8}$  inch, and the length of the stalk is from  $\frac{1}{10}$  to  $\frac{1}{2}$  inch. The cocoon contains about six brown eggs.

The female is  $\frac{1}{8}$  inch.

\* c. 21. *Theridion signatum*. (Plate X. fig. 5 ♀ ;

Plate II. fig. 23, eyes.) The female is not described. The two middle eyes of the front row are prominent. The lateral eyes are in contact. The falces are joined together at the base, and their fang is short and strong. The maxillæ are enlarged at the insertion of the palpi. The lip is triangular and pointed. The abdomen is egg-shaped, and slightly overhanging. The cephalothorax is large, rather contracted towards the face, spinous at the edges, and indented.

The shield is rough, and of a dark brown colour. The abdomen is slightly hairy and blackish, with a bright yellow crescent in front, a pair of bright yellow oblong spots at the sides, and a similar spot near the tip. There is a ridge in front of the abdomen, on which are a few hairs. The abdomen is blackish below. The breastplate, which is rough, is dark brown.

The legs are rather thick, and the male has two rows of spines in different situations in the different pairs. The order of length is  $\frac{1}{4}$  2 3. They are red-brown, very dark in parts.

Length of the male nearly  $\frac{1}{4}$  inch.

This spider is rare. The cocoon is flattened, and of a close texture.

*\*\* The four middle eyes not forming a perfect square; the two lateral eyes sometimes on tubercles.*

**\*\* 22. *Theridion angulatum*.** (Plate X. fig. 6 ♂.) The eyes are nearly equal in size. The four middle eyes nearly form a square. The lateral eyes are oblique, and almost in contact. The falces have a dark spot in front. The maxillæ are enlarged at the insertion of the palpi. The lip is somewhat semicircular, but rather pointed at the tip. The breastplate is long. The abdo-

men is long, notched in front, and overhangs the cephalothorax. On each side, nearer the tip than the base, is a sudden angular projection, whence the species derives its name. The cephalothorax is contracted towards the face, and indented. It is pale brown, and has a red-brown stripe on each side and down the middle, and the margins are nearly white. On the upper side of the abdomen, reaching to the angular part, is a dark-red-brown patch darkest at the edges. The hind part of the abdomen is much paler. An uneven whitish border runs round the whole upper side of the abdomen, on which are two pairs of small whitish spots, and a yellow line crosses it at the angular part. The abdomen is dark reddish-brown below and on the sides, with pale streaks and spots. The breastplate is dark reddish-brown.

The legs are pale and ringed. The order of length 1 4 2 3. The fore leg is twice the length of the third. The palpus of the female is reddish-brown, and its claw is toothed.

The female is  $\frac{1}{7}$  inch.

\*\* 23. *Theridion fuscum*. The two middle eyes of the front row are much smaller than the rest, and much nearer together than those of the hind row. The middle eyes of the hind row are the largest of all; the lateral eyes are oblique and in contact. The falcies are small, have a few teeth, and lean in a little towards the breastplate. The breastplate is broad. The lip is semicircular. The abdomen is almost globular, but a little flattened above, and overhangs the cephalothorax much. The cephalothorax is contracted towards the face, very round behind the eyes, and slants down at the base. It has a large dent and convergent wrinkles.

This spider is glossy and dark red-brown. The abdomen is slightly hairy, and is faintly spotted with dark brown.

The legs are strong, hairy, and spinous. Their order of length is 1 4 2 3. The female palpal claw is plain.

The female is  $\frac{1}{16}$  inch.

**\*\* 24. *Theridion flipes*.** The two middle eyes of the front row are much smaller than the rest, and are nearer together than those of the hind row. The middle eyes of the hind row are the largest of all. The lateral eyes are in contact. The falcæ are toothed, rather spreading, and lean a little towards the breastplate. The maxillæ are enlarged at the insertion of the palpi, and the lip is semicircular and projecting. The abdomen is egg-shaped.

The spider is glossy. The shield is brown. The abdomen blackish-brown with an olive hue. It sometimes bears a series of faint lightish angular markings. The breastplate is brown. The gills are dark brown, and in the female have a pale thread-like process between them, which points towards the spinnerets.

The legs and female palpi are long, thin, hairy, spinous, and of a brown colour. The order of length in the legs is 1 4 2 3. The upper claws only are slightly toothed.

The female is  $\frac{1}{8}$  inch.

**\*\* 25. *Theridion guttatum*.** The two middle eyes of the front row are prominent, are the darkest of all, and are a little nearer together than those of the hind row. The lateral eyes are oblique and in contact, and are the largest of all. The maxillæ are pointed, and lean much towards the lip. The lip is semicircular. The breastplate is broad. The abdomen is nearly globular, and rather

pointed at the lip. The cephalothorax is prominent in front.

The spider is glossy, very dark brown, and covered with prick-like marks. There is a line composed of fine yellow spots down the middle of the abdomen, and a line of three similar spots is on each side.

The legs are thin, hairy, and yellowish-red, with brown rings. The order of length is 1 4 2 3. The female palpi are of the same colour, and the palpal claw is slightly hooked.

The female is  $\frac{1}{11}$  inch long.

\*\* 26. *Theridion flavo-maculatum*. The two middle eyes of the front row are prominent, are the largest of all, and are rather wider apart than those of the hind row. The lateral eyes are oblique, and near together. The maxillæ are gibbous, and lean much towards the lip. The lip is semicircular. The abdomen is egg-shaped and round above, and overhanging. The cephalothorax is dented, short, wide behind, and narrow at the face in the female. In the male the cephalothorax is rather shorter in proportion.

The spider is glossy. The shield is reddish-brown with dark edges. The abdomen is blackish, streaked, and spotted with pale red-brown. The lower side of the abdomen is blackish with yellowish gills, and a yellowish line down the middle. The breastplate is reddish-brown with dark edges.

The legs are short, slightly hairy, and pale, except the lower joint, which is dark. The order of length is 4 1 2 3.

The female is a little over  $\frac{1}{4}$  inch.

27. *Theridion auratum*. (Plate II. fig. 22 *b*, eyes.) The cephalothorax is broad behind, pointed before, with

a longitudinal ridge in the fore part. The abdomen is nearly globular.

The shield is glossy and dark brown. The abdomen is yellow, and has a pattern of short, coarse, dark hairs, which form a broad brown band lying along the middle. This spider is sometimes much lighter in colour. Below, is a longitudinal dark-brown band, and the breastplate is blackish.

The legs are thin, hairy, and dark.

The male is more than  $\frac{1}{8}$  inch.

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#### Genus II. PHOLCUS.

*Eyes* on a prominence. The two smallest are in the middle in front, and three are grouped close together in a triangle on each side: all on black spots. (Plate II. fig. 24, *P. phalangioides*.)

*Falces* rather wedge-shaped. They are joined together at the base, and have one small tooth. In the male they have several conical projections.

*Maxillæ* long, wide at the base, tapering, and leaning towards each other.

*Lip* short, widest in the middle.

*Legs* extremely long and thin. Their order of length, 1 4 2 3.

*Claws of feet* 3; the two upper toothed, the lower plain.

*Abdomen* long and cylindrical, ending rather abruptly; a little larger behind than before.

*Cephalothorax* round, and not dented; prominent in front.

*Breastplate* heart-shaped.

*The female* is  $\frac{1}{8}$  inch long.

*Pholcus phalangioides*. (Plate X. fig. 7 ♀; Plate II. fig. 24, eyes.)



Fig. 28.  
Jaws and lip of  
*P. phalangioides*.

This spider is so easily distinguished from others by the arrangement of its eyes, by its general form, and by the unusual length of its legs, as not to require a very detailed description.

It is of a pale yellowish-brown colour with irregular darkish markings down the middle of the abdomen, and faint spots on the sides. The spinnerets are marked with dark colour.

The longest pair of legs is upwards of two inches, and the shortest is upwards of one inch in length. They are pale, with dark knee-joints.

This spider frequently spins her snare in the corners of ceilings, etc. It is composed of threads crossing in every direction, but not tightly stretched. The cocoon is formed in June. It is of an extremely slight texture. The female carries it about with her by the falces, not attaching it to herself by threads. She does not relinquish it when the eggs are first hatched, and the appearance produced by the cluster of young still carried by her falces is very singular.

When an insect falls into the snare the *Pholcus* immediately commences a rapid quivering motion of its body, which, shaking the loosely-hung snare, increases the struggles of the prey, and so helps to entangle it. This habit is not peculiar to this species, as has been observed elsewhere. The *Pholcus* removes the remains of its prey from the snare when the juices have been sucked.

## FAMILY IX. LINYPHIIDÆ.

## Genus I. LINYPHIA.

*Eyes.* In two rows. The middle eyes of the front row nearer together than those of the hind. The lateral eyes near together or in contact, and generally placed obliquely on a tubercle. (Plate II. fig. 25, *L. montana*.)

*Falces.* Toothed on one or both edges of the groove, or without teeth. Sometimes gibbous, or bearing a projection or pointed appendage near the base of the fang. Frequently long and divergent in the male.

*Maxillæ.* Rather square; the outer corner of the tip rounded; set straight or leaning a little towards the lip; sometimes gibbous.

*Lip.* Semicircular or nearly triangular, generally prominent at the tip.

*Legs.* Long and thin. Order of length 1 4 2 3.

*Claws of feet.* Three. The two upper toothed, and the lower usually plain.

*Palpal claw* of female plain or toothed.

*Cephalothorax.* Oval above, indented, and glossy.

*Abdomen.* More or less egg-shaped in the female, high and rounded on the upper side and pointed at the spinnerets, overhanging the cephalothorax. In the male sometimes cylindrical.

*Breastplate.* Heart-shaped.

*Length of female* from  $\frac{1}{4}$  to  $\frac{1}{12}$  inch.

\* *The middle eyes of the front row smaller than the middle eyes of the hind row.*

a. *The eyes on black spots.*

b. *The eyes not on black spots.*

\* a. 1. *Linyphia montana*. (Plate XI. fig. 1 ♀, 1 a ♂;



Plate II. fig. 25, eyes.) The middle eyes of the hind row are much the largest, and those of the front row are the smallest of the eight. The falcæ are toothed. In the female they lean inwards, and are a little spreading; in the male they are very long, both the base and the fang spread widely, and have a projection in front. The maxillæ are hollowed underneath. In the female the abdomen is very high, especially on the fore part, and rather flattened on the sides. In the male it is nearly cylindrical.



Fig. 27.  
Falcæ of  
L. mon. ♂.



Fig. 28.  
Jaws and lip  
of L. mon.

The spider is glossy. The shield is pale brown in the female, reddish-brown in the male. It has a dark line, forked in front, down the middle, and a fine dark line above the edges. The abdomen is slightly hairy. In the female a dark band, toothed at the edges, runs down the middle. This is finely spotted with white, and a white transverse crescent divides it near the spinnerets. On each side of this band is a conspicuous irregular white band, which, with a horizontal line much lower down, encloses a dark space comprising nearly the whole of the flattened side. Another white line occurs almost at right angles with this lower line, near the spinnerets. In the male the abdomen is dark reddish-brown, very faintly marked. The breastplate and lower side of the abdomen are nearly black.

The legs and palpi are hairy and spinous, in the female pale brown with a greenish hue on the thighs, reddish-brown in the male. The palpal claw of the female is long and toothed.

The female is  $\frac{1}{4}$  inch long.

This spider is very common. From the habit which

is common to this family of remaining in an inverted position on the web, even when running swiftly, the dark breastplate and under side of the abdomen, and the distinctly-marked sides, are all that are usually visible, and are sufficient to distinguish the female spider. The male is frequently to be found close by or on the same web, and is then, though very different from the female in shape and colouring, to be recognized by its conspicuous falces, and its prevailing dark-reddish and black hue.

The snare is woven chiefly in hedges and large shrubs, and the lines above the horizontal sheet sometimes form a very high and beautiful pyramid. Below, the web is held down by threads attached to several parts of its surface.

This spider forms a flattened white cocoon, which she usually conceals under a stone, and, deserting her snare and losing all her activity, she remains with it, guarding it with great care.

\* *a. 2. Linyphia triangularis.* (Plate XI. fig. 2 ♀.)

The hind middle eyes are the largest of the eight. The front middle are the smallest and darkest of the eight, and are prominent. The lateral eyes are in contact. The falces have a few teeth. The abdomen is broadest behind, and slopes suddenly to the spinnerets. The cephalothorax is high in front, and has raised edges.

The shield is brown, with whitish edges. The abdomen is hairy, and has a broad black stripe down the middle with waved edges, bearing on its fore part two lines of yellowish-white spots, and on its hind part two pairs of large spots, of which the foremost nearly meet. On each side of the black band is an uneven yellowish-white border, the hinder part of which sends out light streaks. A yellowish-white line lies below it towards the front part. The male is darker and less plainly marked

than the female. The breastplate is black. The abdomen is black below, with two lines of yellowish-white spots running down it. The gills are yellowish-brown.

The legs are hairy, spinous, and pale brown, the thighs being greenish in the female but not in the male. The palpal claw is plain.

The female is  $\frac{1}{2}$  inch long.

This species is said to retire in its old age to some quiet place, as into a ditch, or sometimes into a building, living there with somewhat of the habits of the *Tegesaria*.

\* *a. 3. Linyphia esula*. The hind middle eyes are the largest of the eight. The front middle eyes are the smallest, and are prominent. The palces have one row of teeth and lean inwards. The maxillae are straight, and much hollowed beneath. The abdomen is very high above. The cephalothorax is contracted towards the face. In the male it is high in front.

The spider is glossy. The shield has some long hairs in front, which point forwards. It is pale brown, with a dark line, wide in front, down the middle, and black edges. The abdomen is slightly hairy, and is pale-brown above, speckled with whitish colour. On the fore part are some large dark patches, succeeded by a series of dark curved lines. The sides are dark, with an uneven pale stripe, bearing white spots, running down them. Below, the abdomen is pale brown, finely speckled with whitish colour, and with three yellow spots running together close below the spinnerets. The gills are pale yellow. The breastplate is blackish, and thinly covered with long upright hairs.

The legs are hairy, spinous, pale brown, and ringed. The female palpal claw is toothed.

The female is less than  $\frac{1}{4}$  inch. The male is a little smaller.

This *Linyphia* is nocturnal in its habits, and builds chiefly against walls, under banks, and in similar situations.

\* *a. 4. Linyphia vivax.* The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are in contact. The falces have one row of teeth, and lean a little inwards. The maxillæ are short, straight, and hollowed beneath. The abdomen is very high in the female, small and slender in the male.

The shield is yellowish-brown, with a black line in the middle, forked in front, and an uneven black stripe on each side. The abdomen is slightly hairy. It is yellowish-brown speckled with white. A row of irregular dark spots runs down each side of the middle. These spots are connected in pairs by angular dark lines, the foremost of which are divided by a fine dark line, and from them streaks of confluent dark spots run into a longitudinal dark line down each side. Below this is a second dark line. The abdomen is blackish below, with a pale brown line down the middle. The breastplate is dark brown, clothed with long upright black hairs.

The legs are hairy and spinous, reddish-brown with blackish rings. The female palpal claw is plain.

The female is less than  $\frac{1}{4}$  inch.

\* *a. 5. Linyphia crypticolens.* The hind middle eyes are the largest and the front middle the smallest of the eight. The falces have one row of teeth. The maxillæ are straight. The lip is squarish. The breastplate has prominences. The abdomen is high in the female.

The cephalothorax is round above, contracted towards the face, and furrowed.

This spider is pale yellowish-brown, the male darker than the female. The shield is pale, with a black band, narrowest in the middle, running down it, black edges, and a black spot on the face. The abdomen is rather hairy. A conspicuous curved black line, thickened at the ends, occurs on the fore part, in the middle of which is a short curved line, almost forming with it a loop. This is followed by a few pairs of longitudinal, and then by some pairs of oblique, black lines ending at the spinnerets. There are a few oblique black streaks on the sides of the hinder half. The breastplate is pale, with black edges. The abdomen below has a small black line across its fore part, and two oblique black lines, which proceed from near the spinnerets, and spread suddenly towards the breastplate. Near the spinnerets are five black spots. The gills are whitish.

The legs are of a pale colour, ringed with black in the female. In the male they are redder, and less distinctly ringed. The palpal claw is toothed.

The female is  $\frac{1}{4}$  inch.

This *Linyphia* is remarkable for the habit of carrying her cocoon fastened by threads to her spinnerets. It is globular, and of a diameter equal to the whole length of the mother. It is formed in June or July, and is of a pale brownish colour, containing brown eggs. The spider is found in dark and damp places, as in cellars, under stones, etc.

\* *a. 6. Linyphia anticeps.* The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are in contact. The falcæ have one row of teeth. The maxillæ are straight, and in the

male are much hollowed on the outer side. The abdomen is high and flattened on the sides in the female, more slender in the male. The cephalothorax is small at the face, and in the male is long, very prominent, pointed and bristling in front.

The spider is glossy. The shield is light yellowish-brown, with a black line down the middle and black edges. The abdomen is pale yellow, speckled above with white, and bears faint angular dark marks on the hinder part, and oblique streaks on the sides. These markings are occasionally almost wanting. Below, the abdomen and the breastplate are pale. The gills are yellow.

The legs are spinous, and, with the female palpi, are of a pale colour. The palpal claws are toothed.

The female is less than  $\frac{1}{4}$  inch.

\**a. 7. Linyphia tenuis.* (Plate XI. fig. 3 ♀.) The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are in contact. The falces have one row of teeth. The cephalothorax is contracted, small and projecting at the face.

The spider is glossy. The shield is dark brown, darkest at the edges. The abdomen is slightly hairy, pale brown above, with paler mottling. A series of curved and angular black lines, with thickened ends, runs down the middle; a dark longitudinal line is on each side, and a whitish semicircular mark over the spinnerets. The sides of the abdomen are blackish, with a curved whitish line on the fore part. The breastplate and under side of the abdomen are blackish, the gills yellowish-brown.

The legs are hairy, spinous, and yellowish-brown, as are the female palpi.

The female is  $\frac{1}{10}$  inch.

This is a common species.

\* *a. 8. Linyphia terrioola.* The hind middle eyes are the largest and the front middle the smallest of the eight, the latter being very small and prominent. The falcies have one row of teeth. The maxillae are straight. The abdomen is high in the female, more slender in the male, which is smaller.

The spider is glossy. The shield is yellowish-brown. The abdomen is pale reddish-brown above, with whitish mottling. A series of curved, angular, black lines runs down the middle, and a pale reddish-brown mottled line runs down the sides, which are dark brown, thickly mottled with pale. The male is paler and more faintly marked than the female. Below, the spider is dark brown, and the gills are whitish.

The legs are hairy and spinous, and of a pale colour.

The female is  $\frac{1}{8}$  inch.

Frequently found upon moss in woods.

\* *a. 9. Linyphia insignis.* The hind middle eyes are the largest, and the front middle the smallest of the eight. The falcies have a few teeth. The abdomen is very high, especially in front, and has a long, slender, reddish projection from the fore part of the under side in the female. The cephalothorax is furrowed.

The spider is glossy. The shield is yellowish-brown and dark at the edges in the female. In the male it is brown. The abdomen is yellowish with markings which vary in different individuals. They usually consist of a series of black angles, which runs down the middle of the upper side, and an uneven black stripe on each side. The under side of the abdomen is yellowish-brown. There is a pair of black spots on the fore part, and there

are black spots or blotches near the spinnerets. The breastplate is dark brown.

The legs are hairy, spinous, and pale yellowish-brown in the female, reddish in the male.

The female is less than  $\frac{1}{8}$  inch. The male is smaller.

\* *a. 10. Linyphia pulchella.* The female is not yet described. In the male the hind middle eyes are the largest, and the front middle the smallest of the eight; the lateral eyes are not on tubercles nor oblique. The falces have one row of teeth. The maxillæ increase in size at the insertion of the palpi.

The spider is glossy. The shield is yellowish-brown. The abdomen is slightly hairy and whitish. A series of faint angular dark marks, faintest in front, runs down the upper side. The abdomen is pale brown beneath, and the breastplate is reddish-brown. The gills are dark.

The legs are hairy, spinous, and pale brown.

The male is  $\frac{1}{10}$  inch.

\* *a. 11. Linyphia circumspecta.* The female is not yet described. In the male the middle front eyes are the largest, and the middle hind the smallest of the eight. The lateral eyes are in contact. The falces have a few teeth. The breastplate is broad. The cephalothorax is furrowed.

This minute spider is glossy, yellowish-brown above, darker below. The abdomen has a series of faint dark angular lines running down it.

The legs are hairy and spinous.

The male is  $\frac{1}{4}$  inch.

\* *a. 12. Linyphia rubea.* The front middle eyes are the smallest of the eight. The lateral eyes are in contact. The falces have a few teeth, and lean a little



towards the breastplate. The maxillæ are straight. The breastplate is broad. The abdomen is high in the female, more slender in the male. The cephalothorax is contracted toward the face, and the dent is large.

The spider is glossy. The shield is yellowish-brown in the female, reddish in the male, dark on the face. The abdomen has a few hairs. A brown patch, much cut at the edges, and darkest behind, runs down the middle, on each side of which is an uneven white band containing a dark oblique streak on its hinder part. The two white bands join at the spinnerets. The sides are brown, with yellowish mottling, and bear one upright and one longitudinal yellowish line. The abdomen is brown below, yellowish in the middle. The breastplate is dark brown, with a reddish tinge in the male.

The legs are hairy and spinous, pale brown, with a greenish hue in the female, but not in the male. The female palpal claws are plain.

The female is under  $\frac{1}{4}$  inch.

Found in woods, etc.

\* *a.* 13. *Linyphia alacris*. The front middle eyes are the smallest of the eight, and are prominent. The falces are rather spreading, have one row of teeth, and lean a little towards the breastplate. The maxillæ are straight. The breastplate is broad and rounded.

The spider is glossy. The shield is pale yellowish-brown, dark at the edges; and, in the male, has projecting hairs on the fore part. The abdomen is yellowish-brown, with whitish mottling. Down the middle runs a toothed and broken black stripe, much broken behind, where it sends out fine slanting black lines upon the sides, which are blackish, and have a mottled pale band

down them, meeting at the tip. Below, the abdomen is blackish and the breastplate is dark brown.

The legs are hairy, spinous, and of a pale colour.

The female is  $\frac{1}{16}$  inch; the male smaller.

\* *a. 14. Linyphia ericea.* The front middle eyes are the smallest of the eight, and are prominent. The falces have one row of teeth and are a little spreading. The maxillæ lean a little towards each other. The breastplate is rounded.

The spider is glossy. The shield is yellowish-brown. The abdomen is paler, slightly hairy, and marked with faint dark spots. The abdomen is rather darker below than above, and the breastplate is brownish. In the female there are four reddish-brown processes on the fore part of the under side of the abdomen, which point towards the tip.

The legs are hairy and spinous, and of a pale colour.

The female is  $\frac{1}{16}$  inch. The male much smaller.

\* *a. 15. Linyphia pernix.* The female is not yet described. The front middle eyes are the smallest of the eight. The falces are long and strong, toothed, lean towards the breastplate, and have a prominence at the base. The maxillæ are rather wide towards the tip.

The shield is glossy, bristled on the fore part, and dark brown in colour. The abdomen is slightly hairy and yellowish-brown, with a series of black angular markings running down the middle. These marks are faint in the medial line, the tips of those in front being the most distinct. There is a small pale spot at the tip of the abdomen just above the spinnerets. Below, the abdomen is pale brown and the breastplate is very dark.

The legs are hairy, spinous, and red.

The male is  $\frac{1}{16}$  inch.

\* *a. 16. Linyphia albula.* The eyes are small, the front middle being the smallest of the eight, and the lateral eyes are in contact. The falcæ have a few teeth and lean a little towards the breastplate, and the maxillæ are straight. The abdomen is slender.

The shield is glossy, pale brownish-yellow, with faint darkish converging lines in front and on the sides. The abdomen is slightly hairy, yellowish-white above. A fine brown stripe runs down the middle to a point at the tip of the abdomen, sending out branches from the fore half, and having three brown spots on each side of its hinder half. The abdomen is a little deeper in colour below than above, and bears two faint curved brown lines, which meet at the tip. The breastplate is brown.

The legs are pale, especially on the thighs.

The female is  $\frac{1}{4}$  inch.

\* *a. 17. Linyphia tenella.* The front middle eyes are the smallest and darkest of the eight, and are prominent. The lateral eyes are in contact. The falcæ have a row of small teeth. The maxillæ are straight.

This spider is glossy. The shield is brown, black at the edges. The abdomen is dull olive-green, with faint darker angular lines down the middle. The abdomen is darker below than above, and the breastplate is dark brown.

The legs are hairy, spinous, and pale yellowish-red.

The female is  $\frac{1}{4}$  inch.

\* *a. 18. Linyphia socialis.* The front middle eyes are the smallest of the eight and are very near together. The lateral eyes are in contact. The falcæ lean towards the breastplate; they are long, spreading, spinous in front and have one row of teeth. The maxillæ are straight. The cephalothorax is contracted towards the face.

The shield is pale yellowish-brown. A black line, forked in front, runs down the middle, the edges are black, and above them is a row of black spots. The abdomen is greenish-white, with a greenish-brown network over it. On the front is a black curved line, on which are four white spots, and which reaches halfway down the sides, and then suddenly turns back again upwards, being succeeded on each side by a double oblique black mark between it and the spinnerets. Down the middle are a number of greenish-brown angles. The sides are spotted with yellowish-white. Below, the abdomen is reddish-brown, speckled thinly with yellowish-white, and there is a black streak near the gills, which are pale. The breastplate is pale yellowish-brown.

The legs are spinous and pale, with blackish rings. The lower foot-claw has one or two small teeth at the base. The female palpi, which are very spinous, have a toothed claw.

The female is  $\frac{1}{4}$  inch.

\* *a.* 19. *Linyphia Meadii*. The front middle eyes are the smallest of the eight. The falces are spreading, and have one row of teeth. The maxillæ are straight. The breastplate is short and broad. The abdomen is more slender in the male than in the female. The cephalothorax is wrinkled.

The shield is glossy and light yellow-brown. The abdomen is dull olive-green, with pairs of faint, pale, oblique streaks running down the middle of the upper part, and a pale stripe is on each side. The abdomen is dull olive-green below. The breastplate is brownish, darkest at the edges. The gills are pale yellow.

The legs and palpi are hairy, spinous, and pale yellow-brown.

The female is  $\frac{1}{4}$  inch.

b. *The eyes not on black spots.*

\* *δ*. 20. *Linyphia marginata*. The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are not oblique. The falces lean towards the breastplate, and have a row of teeth, of which, in the male, one is larger than the others. The abdomen is more slender in the male than in the female. The cephalothorax is wrinkled, and projects in front.

The shield is very dark brown. The abdomen has a blackish patch down the middle, on which are several angular black lines, and which has a broad uneven brown border, thickly spotted with white in front and more sparingly with black and white behind. In front this is divided by a transverse black line. Near the spinnerets are some small whitish spots. The male is darker than the female. The sides are brown, spotted with white, and have a curved blackish line running from the base about halfway to the tip. Below, the abdomen is dark brown, with four small whitish spots placed in a square. The breastplate is nearly black.

The legs are spinous and yellowish-brown, with black rings. The lower foot-claw and the female palpal claw are toothed.

The female is  $\frac{1}{4}$  inch.

This spider is found in situations similar to those frequented by the common *Linyphia montana*. The cocoons are flattish, white, and one or two in number, the largest being  $\frac{1}{2}$  inch in diameter.

\* *δ*. 21. *Linyphia fuliginea*. The front middle eyes are the largest and the hind middle the smallest of the eight. The lateral eyes are not on tubercles. The falces are long and strong, lean towards the breastplate, and

have one row of teeth. The maxillæ are straight, hollowed beneath, and in the male are rather broad at the tip. The abdomen is very high in the female, nearly cylindrical in the male. The cephalothorax is contracted towards the face, and in the male is rather long.

The spider is glossy. The shield is dark brown. The abdomen has a few hairs and, in the male,\* is blackish with a pair of whitish spots on the forepart. In the female the upper part of the abdomen is surrounded by a broken white band; inside this there is a dark brown band which again encloses a white-bordered, dark, toothed stripe, running down the middle of the abdomen.

The spider is nearly black below.

The legs are pale brown, with a greenish hue in the female; light reddish-brown in the male, as are the male palpi, except their tips, which are dark. The palpal claw of the female is plain.

The female is  $\frac{1}{8}$  inch. The male smaller.

\* *b.* 22. *Linyphia minuta*. (Plate XI. fig. 4 ♂.) The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are in contact. The falcæ have one row of teeth. The maxillæ are straight. The abdomen of the male is more slender than that of the female. The cephalothorax is contracted towards the face, and projects in front.

The spider is glossy. The shield is dark brown. The abdomen has a few hairs, and is light brown, speckled, with whitish colour above. Several dark angular lines run down the middle. At the tip is a transverse curved whitish line, and a whitish line is on the sides, which are brownish-black.

\* See the male of *L. pratensis*, which this greatly resembles.

The spider is nearly black below, the gills are pale.

The legs are hairy and spinous, and reddish-brown, ringed with black. The female palpal claw is toothed.

The female is  $\frac{1}{4}$  inch. The male less.

\* *a. 23. Linyphia pulla.* The hind middle eyes are the largest, and the front middle the smallest of the eight. The falces lean towards the breastplate, are a little spreading, and have a few teeth. The abdomen of the male is more slender than that of the female.

The spider is glossy and of a blackish colour. The shield is darkest at the edges. A more or less distinct, toothed, pale brown stripe runs down the middle, on each side of the forepart of which is a faint pale brown line.

The spider is dark below.

The legs are hairy and slightly spinous, and pale in colour.

The female is  $\frac{1}{5}$  inch.

\* *b. 24. Linyphia nigella.* The female is not yet described. The hind middle eyes are the largest, and the front middle the smallest of the eight, and very small. The lateral eyes are in contact. The falces lean towards the breastplate. They are long and spreading, and have one row of teeth. The claws lean a little towards each other.

The male of this spider is glossy, and is very dark brown or blackish, the upper part of the cephalothorax being nearly black.

The abdomen is dark and without pattern, or sometimes has a faint series of paler angular markings down it.

The gills are pale.

The legs are hairy, spinous, and pale brown, with reddish thighs.

Length of the male  $\frac{1}{8}$  inch.

\* *b. 25. Linyphia furva.* The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are not on tubercles. The falces are spreading, lean towards the breastplate, and have one row of teeth. The maxillæ are straight, and convex beneath. The breastplate is broad.

The spider is glossy and dark brown. The abdomen, which has a few hairs, is blackish.

The legs are hairy, spinous, and yellowish-brown.

The female is  $\frac{1}{8}$  inch. The male rather smaller.

\* *b. 26. Linyphia obscura.* The female is not yet described. The hind middle eyes are the largest, being very large, and the front middle are the smallest of the eight. The lateral eyes are in contact. The falces have a few teeth in one row, and lean towards the breastplate. The maxillæ surround the lip, are gibbous beneath, and pointed at the inner corner of the tip.

The spider is glossy. The shield is very dark brown, nearly black. The abdomen is slightly hairy and blackish. It is sometimes faintly streaked with curved transverse lines, bears a spot on each side in front, and a whitish line runs down each side. Sometimes all these markings are whitish.

The legs are hairy, spinous, and yellowish-brown, with somewhat of a red hue.

The male is  $\frac{1}{12}$  inch.

\* *b. 27. Linyphia gracilis.* The female is not yet described. The hind middle eyes are the largest, and the front middle the smallest of the eight. The lateral eyes are in contact. The falces have a few teeth in one row,



and lean towards the breastplate. The maxillæ are enlarged at the insertion of the palpi, and lean towards each other. The breastplate is convex. The cephalothorax is wrinkled.

The spider is glossy and brownish-black. Sometimes the abdomen, which is slightly hairy, is faintly marked with a series of brownish angular lines.

The legs are hairy and spinous, and are of a pale reddish-brown colour.

The male is  $\frac{1}{16}$  inch.

\* *b.* 28. *Linyphia pratensis*. (Plate XI. fig. 5 ♀, 5a ♂.) The hind middle eyes are the largest of the eight. The lateral eyes are not oblique. The falces of the female are strong, hollowed in front, lean towards the breastplate, and have a row of teeth. In the male the falces are very strong, have an excrescence at the base, many small tubercles on the surface, and several teeth, of which one is much larger than the rest. The abdomen is very high in the female, and nearly cylindrical in the male. The cephalothorax is large, slightly furrowed, and in the male rather longer than in the female.

The spider is glossy and of a dark brown colour. In the female the abdomen, which is slightly hairy, has a dark band, toothed at the sides, and edged with whitish colour running down it, and an uneven whitish stripe along each side. In the male the abdomen is blackish, and there is only one irregular white spot on each side of the forepart.

The legs are hairy and spinous. In the female they are yellowish-brown, sometimes with a slight green tinge, and in the male they are yellowish-red, and the palpi of the male are dark reddish-brown. The female palpal claw is plain.

The female is  $\frac{1}{3}$  inch.

*L. pratensis* is a common spider. The male is very like that of *L. fuliginea*, but is larger. The falces and palpi also serve to distinguish the species.

\* *b.* 29. *Linyphia flavipes*. The middle front eyes are the smallest and darkest of the eight, and are prominent. The falces have a few teeth in one row, and lean towards the breastplate. The maxillæ are straight. The breastplate is broad and convex.

The spider is glossy and blackish, sometimes faintly marked with a row of palish angular lines down the abdomen.

The legs are especially long in the male, they are hairy and spinous, yellow in the male, and a paler yellow in the female.

The female is  $\frac{1}{14}$  inch.

\* *b.* 30. *Linyphia Claytoniæ*. The middle front eyes are the smallest of the eight. The falces are strong, have one row of teeth, and lean towards the breastplate. In the male they have a small excrescence near the base. The maxillæ are straight, and the breastplate is convex.

The spider is glossy. The shield is dark brown, in the male it is bristled in front. The abdomen is dark black, with a row of faint palish angular lines.

The breastplate is dark brown. The abdomen black below.

The legs are hairy and spinous, and bright yellowish-red, as are the palpi, excepting their end joint in the male, which is dark.

The female is  $\frac{1}{8}$  inch. The male is more slender than the female.

**\*\*** *The middle eyes of the front row the largest of the eight.  
The eyes on black spots.*

**\*\*** 31. *Linyphia longidens*. The lateral eyes are in contact. The falcæ are strong and spreading, lean towards the breastplate, and have two rows of teeth, the front row being composed of very long fine teeth, and the fang is long. The maxillæ are straight. The breastplate is pointed behind. The abdomen is, in the female, a little broader behind than before, and high above. In the male it is smaller and more slender. In the male the forepart of the cephalothorax is long, prominent in front, and furnished with long black bristles, projecting forwards.

The whole spider is glossy. The shield is reddish-brown, with a dark stripe on each side. The abdomen has a few hairs. On the upper side it is reddish-brown, finely speckled with white, and has two long rows of blackish patches, which, above the spinners, become confluent in pairs.

The sides are dark brown, with paler freckling. Below, the abdomen is very dark; the gills are pale, and near them in the female is a conspicuous dark brown, curved appendage.

The legs are hairy, spinous, not so long as in most of the *Linyphiæ*, and reddish-brown, faintly ringed with darker colour. The female palpal claw is plain.

The female is  $\frac{1}{6}$  inch.

**\*\*\*** *The eyes nearly equal in size.  
On black spots.*

**\*\*\*** 32. *Linyphia frenata*. The lateral eyes are in contact. The falcæ are long and strong and have one row of teeth. In the male they are longer than in the

female and are divergent. The maxillæ are straight, and have a black spot at the tip. The abdomen is humped. The cephalothorax is wrinkled, and in the male is very high in front.

The spider is glossy. The shield is pale yellowish-brown, with a black stripe down each side, and in the male has curved black hairs on the forepart. The abdomen is slightly hairy, pale reddish-brown, speckled with white in front, and has a series of black spots on each side of the hinder half, and a series of small transverse lines at the tip.

The sides are streaked with black. Below, the abdomen is reddish-brown. The gills are yellow. The breastplate is blackish.

The legs are remarkably long in the male, they are hairy and spinous, and of a pale yellowish-brown, with a green hue on the thighs, and a few faint dark rings. The female palpal claw is plain.

The female is nearly  $\frac{1}{4}$  inch.

This spider is rare.

*Not fully described.*

33. *Linyphia nasata*. The cephalothorax is short and broad behind, the sides slope suddenly, and there is a nose-like projection at the face. The abdomen is rounded.

The shield is pale brown above, and its sides are dark green. The abdomen is pale yellowish-brown, with a pale pointed stripe down the middle, on each side of which are faint brown spots.

The breastplate is dark brown. The legs are hairy, spinous, and pale brown in colour.

The female is  $\frac{1}{1\frac{1}{2}}$  inch.

## Genus II. NERIENE.

**Eyes.** In two rows. The middle eyes of the front row nearer together than those of the hind, sometimes on a prominence of the cephalothorax. The lateral eyes very close together or in contact, and placed obliquely on a tubercle. The eyes sometimes on black spots. (Plate II. fig. 26, *N. affinis*; fig. 27, *N. longipalpis*; fig. 28, *N. bituberculata*.)

**Falces.** More or less conical, sometimes spreading, toothed on one edge of the base; sometimes gibbous or having projecting appendages.

**Maxilla.** Broad at the tip, leaning or curving towards the lip. Sometimes gibbous at the base.

**Lip.** Usually semicircular and projecting at the tip.

**Legs.** Long, not very thin. Order of length 1 and 4 (equal or nearly so) 2 3.

**Claws of feet.** Three. The two upper toothed (except in *Cornigera*), the lower plain.

**Cephalothorax.** Usually oval. Sometimes having in the male, or in both sexes, one or two remarkable protuberances. See fig. 29, (?) *N. apicata*; and Plate II. fig. 26, 27, 28.

**Abdomen.** Egg-shaped, overhanging the cephalothorax, rounded on the upper side.

**Breastplate.** Heart-shaped; sometimes having prominences.

**Length of ♀ from  $\frac{1}{4}$  to  $\frac{1}{10}$ .**

\* *Abdomen without markings.*

*Legs and cephalothorax lighter in colour than the abdomen.*

a. *Eyes on black spots.*

b. *Eyes not on black spots.*

\* a. 1. *Neriene bicolor*. (Plate XII. fig. 1 ♀.) The

cephalothorax is rounded above, indented and contracted towards the face.

The spider is glossy. The shield is reddish-brown, darkest at the edges, and, in the male, is bristled on the forepart. The abdomen is slightly hairy, and blackish in colour. The breastplate, lip, and maxillæ are reddish-brown, darker than the middle of the shield.

The legs are spinous and reddish-brown.

The female is  $\frac{1}{4}$  inch. The male rather smaller.

This species is common. Sometimes it is found hiding under stones. Its snare resembles that of the *Linyphia*.

\* *a. 2. Neriène rufipes.* The falces lean a little towards the breastplate. The cephalothorax slopes in front, and its indentation is small.

The spider is glossy. The shield is pale reddish-brown. The abdomen is slightly hairy and blackish. The gills are large, and nearly white. The breastplate, lip, falces, and maxillæ are darker than the shield.

The legs are hairy, spinous, and of a light red-brown colour. The female palpal claw is plain.

The female is about  $\frac{1}{7}$  inch long. The male rather smaller.

The cocoons (of which there are several) of this species are to be found in June. They are slightly woven and of a yellowish-white colour, and are fastened to the lower side of stones. They are  $\frac{1}{8}$  inch and less in diameter. The eggs are yellowish-white.

\* *a. 3. Neriène sylvatica.* The female is not yet described. The falces have, besides the teeth, a row of small spines down the front; they lean towards the breastplate. The maxillæ are gibbous near their insertion. The breastplate is broad. The cephalothorax

projects in front; it is wrinkled, and the indentation is large.

The spider is glossy. The shield is brown, and the abdomen slightly hairy and blackish. The breastplate, lip, falces, and maxillæ are brown, darker than the shield. The gills are light yellow.

The legs and palpi are paler than the shield, and of a reddish-brown.

The male is  $\frac{1}{4}$  inch long.

\* *a. 4. Neriene Huthwaitii.* The female is not yet described. The falces are long, rounded in front, and spreading. The maxillæ are cut off aslant near the tip on the outer side. The breastplate is oval. The cephalothorax is wrinkled and indented.

The shield is glossy, yellowish-brown, darkest at the edges. The abdomen is hairy and dark greenish-brown. The breastplate and lip are glossy and dark, the falces darker than the maxillæ, and the breathing-holes are dull yellow.

Legs and palpi dull yellowish, legs hairy and thin.

The male is about  $\frac{1}{2}$  inch long.

\* *a. 5. Neriene cornigera.* (Plate XII. fig. 2 ♂.)

The female is not yet described. The two middle eyes of the front row are the smallest. The falces are spreading. The breastplate is broad and convex. The cephalothorax is rather high in front, and indented.

The spider is glossy. The shield is dull yellowish, the abdomen slightly hairy and brownish. The breastplate and root of the lip are rather browner than the shield, and the spinnerets are pale.

The legs are thin and rather hairy, and, with the palpi, are of a brownish-yellowish colour, part of the two first pairs of legs being browner than the rest. The

male palpi are remarkable for having a kind of horn, long, sharp, and curved, growing at the base of the end joint. The footclaws are not toothed.

The female is  $\frac{1}{18}$  inch long.

*N. cornigera* owes its name to the hornlike appendage of the male palpus.

\* *a. 6. Neriène montana.* The female is not yet described. The two middle eyes of the front row are the smallest and the darkest of all, and are very near together. The breastplate is broad and convex. The cephalothorax is wrinkled and indented.

The spider is glossy. The shield is pale brown, the abdomen darker. The breastplate, gills, and spinnerets are pale brown. The falces, maxillæ, and lip have a reddish hue.

The legs are pale brown.

The male is  $\frac{1}{16}$  inch long.

\* *a. 7. Neriène fusca.* The falces are strong and rounded in front. The maxillæ are strong and meet round the lip. The cephalothorax is indented, and in the male is gibbous behind the eyes.

The shield of the female is glossy. It is yellowish-brown, with dark edges, and two reddish spots on the front edge. In the male it is reddish-brown. The abdomen is slightly hairy, and dark brown in the female, rather palest down the middle both above and below. In the male it is blackish. In the female the breastplate is brown, darkest at the edges; the lip dark brown, with a reddish tip; and the falces and maxillæ are pale reddish-brown. In the male these are all red-brown. The gills are yellow.

The legs and the palpi of the female are yellowish-brown; of the male, reddish-brown.



The female is  $\frac{1}{2}$  inch. The male rather less.

\* *a. 8. Neriene abnormis.* The falces are strong and rounded in front. The maxillæ are nearly straight, and hollowed below. The cephalothorax is slightly wrinkled and indented.

The shield is glossy and reddish-brown in the female, brownish-red in the male. The abdomen of the female is brown, faintly mottled; that of the male is darker. The breastplate is darker than the shield. The lip, maxillæ, and falces are redder. The gills are whitish.

The legs are hairy and spinous, and, with the palpi, are reddish-brown in the female, brownish-red in the male.

The female is  $\frac{1}{2}$  inch. The male rather less.

\* *a. 9. Neriene rubripes.* The two middle eyes of the front row are the smallest. The falces are rounded in front and spreading. In the male they have a pointed projection near the end. The maxillæ of the male are much rounded in front at the base. The cephalothorax is wrinkled and indented.

The spider is glossy. The shield is reddish-brown. The abdomen is blackish and slightly hairy, but the colouring is sometimes lighter. The male is darker than the female. The breastplate is reddish-brown, the edges being dark, as are the lip and falces. The gills are yellowish, and between them, in the female, there is a large process curving backwards.

The legs are hairy, spinous, and, with the palpi of the female, red in colour.

The female is about  $\frac{1}{2}$  inch. The male less.

b. *Eyes not on black spots.*

\* *b. 10. Neriene livida.* The falces are rounded in

front. The maxillæ are hollow beneath. The abdomen is rather broader behind than before. The cephalothorax is wrinkled and indented.

The spider is glossy. The shield is reddish-brown, darkest in front. The abdomen is dull blackish-brown and slightly hairy, becoming darker in the female after the eggs are laid. The male is darker-coloured than the female. The breastplate is reddish-brown; the lip, maxillæ, and falces are darker reddish-brown; and the gills are yellowish.

The legs are strong, hairy, spinous, and reddish-brown. The palpal claw of the female is toothed.

The female is  $\frac{1}{8}$  inch. The male less.

The cocoons are round, slightly spun, and white, containing whitish eggs, and are  $\frac{1}{7}$  inch and less in diameter. The female forms several of these, which she fastens to a stone, remaining with or near to them.

\* *b. 11. Neriène viaria.* The female is not yet described. The middle eyes of the front row are much smaller than the rest. The falces are rather spreading. The cephalothorax is slightly wrinkled and indented.

The spider is glossy. The shield is brown, darkest at the edges. The abdomen is slightly hairy, and nearly black. The breastplate and falces are brown; the lip is darker, and the maxillæ are paler; the breathing-holes are pale.

The legs are hairy, have a few spines, and are paler than the shield.

The spider is  $\frac{1}{10}$  inch.

\* *b. 12. Neriène vagans.* The two middle eyes of the front row are very small and near together. The cephalothorax is indented, and rather low and sloping in front.

The spider is glossy. The shield is dark brown. The abdomen is slightly hairy and black. The breastplate, falces, and maxillæ are brown; the lip is darker; and the gills are pale brown.

The legs are reddish-brown.

The female is  $\frac{1}{12}$  inch.

This spider is common in fields in North Wales and Lancashire, and may be found taking flight in the air.

\* *b. 13. Neriëne avida.* The two middle eyes of the front row are the smallest. The falces are rather spreading. The maxillæ are widened at the insertion of the palpi. The breastplate is broad. The cephalothorax is indented.

The spider is glossy. The shield is brown. The abdomen slightly hairy and blackish. The breastplate is brown; the falces, maxillæ, and tip of the lip are reddish. The gills are pale brown, and in the female there is a projection between them.

The legs are hairy and paler than the shield, as are the female palpi.

The female is  $\frac{1}{8}$  inch. The male rather less.

\* *b. 14. Neriëne parva.* The female is not yet described. The falces have a sharp process in front near the end. The breastplate is broad. The cephalothorax is contracted towards the face, and indented.

This little spider is glossy and of a brown colour, the abdomen being darker than the shield. The breastplate and maxillæ are brown. The falces and lip darker brown. The gills are pale yellow.

The legs are hairy, and of the same colour as the shield.

The spider is  $\frac{1}{10}$  inch.

\* *b. 15. Neriëne bituberculata.* (Plate II. fig. 3 ♂;

eyes and cephalothorax, fig. 28.) The eyes are small, the middle eyes of the front row being the smallest. The cephalothorax slopes behind and is indented; the forepart is high, and, in the male, has two large distinct prominences with a ridge on each side. The eyes are in front of and below these, placed on a convexity.

The shield is glossy and reddish-yellow. The prominences of the male are much paler, and the ridge at their base is brown. The abdomen is slightly hairy and blackish. The breastplate, falces, and maxillæ are reddish-yellow; the lip dark brown. The gills pale yellow.

The legs are hairy, and of a reddish-yellow colour.

The male is  $\frac{1}{10}$  inch.

*N. bituberculata* may be distinguished from *N. cornuta* by its colour.

\* *b.* 16. *Neriène graminicola*. The middle eyes are smaller than the lateral, those of the front row being the smallest of all. The maxillæ have a projection near the tip. The falces have a pointed prominence in the front. The cephalothorax rather projects in front, and is indented.

In the male, the shield is glossy, pale brown, with dark edges. The abdomen is slightly hairy and black. The breastplate and lip are dark brown, the falces and maxillæ red-brown. The female is rather paler than the male.

The legs are yellowish-brown, the thigh a little reddish.

The male is  $\frac{1}{10}$  inch. The female rather more.

\* *b.* 17. *Neriène agrestis*. The falces are rounded in front. The maxillæ are widened at the insertion of the palpi. The breastplate is broad, convex. The cephalothorax is indented.

The spider is glossy. The shield is brown, darkest in

front. The abdomen is dark olive-brown, sometimes palest down the middle. The breastplate and lip are dark brown; the maxillæ and falces rather lighter. The gills are yellowish-brown.

The legs are hairy, and, with the female palpi, are pale reddish- or yellowish-brown.

The female is  $\frac{1}{8}$  inch.

\* *b.* 18. *Neriëne dubia*. The female is not yet described. The middle eyes of the front row are the smallest and darkest. The maxillæ are widened at the insertion of the palpi. The cephalothorax is wrinkled and indented.

The spider is glossy. The shield is reddish-brown. The abdomen is blackish. The breastplate, falces, maxillæ, and lip are reddish-brown. The gills are dark brown.

The legs are hairy and spinous, and much paler than the shield.

The length of the male is  $\frac{1}{18}$  inch.

(\* *b.* *Neriëne munda* ♂.)

**\*\* *Abdomen without markings.***

*Legs lighter in colour than cephalothorax or abdomen.*

*Eyes not on black spots.*

**\*\* 19. *Neriëne furva*.** The female is not yet described. The falces are rounded in front. The maxillæ are widened at the insertion of the palpi. The cephalothorax is slightly wrinkled and indented.

The spider is shining, and of a dark brown colour. The abdomen rather blackish, and slightly hairy. The breastplate and lip are very dark brown. The gills are whitish.

The legs are strong and reddish.

The spider is  $\frac{1}{9}$  inch.

**\*\* 20. *Neriëne gracilis*.** The falces have, in the male, a projection near the fang joint. The abdomen is slender. The cephalothorax is indented.

The spider is blackish. The cephalothorax is glossy, and the abdomen slightly hairy. The gills are dark brown. In the male, the falces and maxillæ have a red tinge.

The legs are thin, hairy, spinous, and pale in colour, The palpi of the female are greenish.

The female is  $\frac{1}{18}$  inch.

**\*\* 21. *Neriëne dentata*.** The two middle eyes of the front row are the smallest and darkest of all. The falces are covered in front and on the outer side with small pointed prominences, and, in the male, they have a pointed appendage in front near the middle. The maxillæ are widened at the insertion of the palpi. The breastplate is broad. The cephalothorax is rounded in front, and indented slightly.

The shield is glossy and dark brown. The abdomen is slightly hairy and blackish. The breastplate and lip are dark brown; the falces and maxillæ are of rather lighter colour, and are tinged with red. The gills are yellowish.

The legs are hairy, spinous, and pale.

The male is  $\frac{1}{16}$  inch long.

**\*\* 22. *Neriëne pygmæa*.** The cephalothorax is indented.

The spider is glossy, and of a dark brown, the abdomen blackish and slightly hairy. The breastplate and lip are brown; the falces and maxillæ dark reddish-brown. The gills are brown.

The legs and female palpi are red.

The female is  $\frac{1}{16}$  inch.

This species is common in fields in Lancashire and North Wales.

**\*\* 23. *Neriëne lugubris*.** The female is not yet described. The cephalothorax projects in front, and is indented.

The spider is blackish or black. The shield is glossy, and the abdomen slightly hairy. The gills are brown.

The legs are red-brown.

The spider is  $\frac{1}{12}$  inch.

**\*\* 24. *Neriëne saxatilis*.** The female is not yet described. The cephalothorax is indented.

The spider is glossy. The shield is brown, the abdomen blackish and rather hairy. The breastplate and lip are darker than the shield, and the gills are dark brown.

The legs are thin, and of a pale brown colour.

The male is  $\frac{1}{12}$  inch.

**\*\* 25. *Neriëne timida*.** The middle eyes of the front row are the smallest. The falces are rather spreading. The cephalothorax is indented.

The spider is glossy. The shield is very dark brown. The abdomen slightly hairy and blackish. The breastplate, lip, maxillæ, and falces are very dark brown; the gills, dark brown.

The legs and the female palpi are pale brown.

The female is  $\frac{1}{12}$  inch; the male rather less.

**\*\* 26. *Neriëne flavipes*.** The female is not yet described. The middle eyes of the front row are the smallest. The middle eyes of the hind row are the largest. The falces are spreading. The maxillæ are widened at the insertion of the palpi. The breastplate is convex. The cephalothorax is slightly indented.

The shield is glossy, and the spider is blackish.

The legs are dull yellow.

The length of the male is  $\frac{1}{18}$  inch.

\*\* 27. *Neriëne tibialis*. The female is not yet described. The cephalothorax projects in front, and is indented.

The spider is glossy, and of a brownish-black colour. The gills are pale yellow.

The legs are reddish-brown, and the tibiæ of the first pair are very large.

The male is  $\frac{1}{12}$  inch long.

\*\* 28. *Neriëne cornuta*. The cephalothorax is contracted towards the face, wrinkled, indented, and convex in front. In the male there are two prominences on the fore part, projecting forward. The eyes are in front of and below these, placed on a convexity.

The spider is glossy. The shield is very dark brown, nearly black on the face. The abdomen has a few hairs, and is black. The breastplate, lip, falces, and maxillæ are very dark brown, and the gills are pale yellow.

The legs and female palpi are light reddish-brown.

The female is  $\frac{1}{10}$  inch.

\*\* 29. *Neriëne apicata*. The female is not yet described. The middle eyes of the front row are the smallest. The falces are spreading; the maxillæ widened at the insertion of the palpi, and cut off aslant at the tip. The breastplate is broad. The cephalothorax is indented. On the fore part is a small upright prominence with a hollow on each side at the base, and in front of which, below, are the eyes.



Fig. 29.  
Cephalothorax of  
*Neriëne apicata* ♂.

The shield is shining and dark reddish-brown. The abdomen is rather hairy and blackish. The breastplate is glossy, and, with the lip, falces, and maxillæ of a dark reddish-brown. The gills are brown.



The legs are hairy, and reddish-brown.

The spider is  $\frac{1}{14}$  inch.

\*\* 30. *Neriëne nigra*. The two middle eyes of the front row are very small and near together. The cephalothorax is contracted towards the face, slightly furrowed, and indented. It is prominent in front, and in the male this part is hairy.

The spider is glossy, and of a blackish colour. The abdomen is slightly hairy. The falces and maxillæ have a slight reddish tinge, and the gills are brown.

The legs are hairy, spinous, and reddish-brown.

The female is  $\frac{1}{10}$  inch.

\*\* 31. *Neriëne longipalpis*. (Eyes, Plate II. fig. 27.) The four middle eyes are placed nearly on a square. The falces have, besides the teeth, a row of small spines. The maxillæ are much widened at the insertion of the palpi. The cephalothorax is contracted towards the face and indented. It is very prominent where the eyes are. In the male, the edges of the shield are toothed, and there is a longitudinal line of spines on the fore part.

The spider is glossy and black. The breathing-holes are yellow.

The legs are reddish-brown. In the female the order of length is 4 1 2 3; in the male, 1 4 2 3.

The female is  $\frac{1}{8}$  inch; the male less.

This spider, although not, like the *argyroneta*, an aquatic species, can live for several days in water, if by any accident it should be submerged. It is also one of the spiders found floating in the air.

The cocoon is roundish, white, slightly woven, and commonly is fastened to the under side of a stone. The eggs are nearly white.

\*\* 32. *Neriëne vigilax*. The female is not yet de-

scribed. The breastplate is broad and convex. The cephalothorax is slightly indented.

The shield is dark brown, darkest at the edges. The abdomen is slightly hairy and black. The breastplate is glossy, and, with the lip, is dark brown. The falces and maxillæ are pale, or have a red tinge. The gills are yellowish-brown.

The legs are hairy and red.

The male is  $\frac{1}{11}$  inch.

**\*\* 33. *Neriëne gibbosa*.** The middle eyes of the front row are the smallest. The falces have, in the male, a prominence in front near the tip. The cephalothorax is, in the female, rather prominent in the middle; in the male there is a large prominence, with a cavity between it and the fore part, which is filled with hairs.

The spider is glossy and dark brown, the abdomen being the darkest, and slightly hairy. The falces and maxillæ are rather paler, and the gills are dull yellow.

The legs are hairy, spinous, and yellowish-brown.

The female is  $\frac{1}{10}$  inch. The male rather less.

**\*\* 34. *Neriëne tuberosa*.** The female is not yet described. The two middle eyes of the front row are the smallest. The falces have a projection in front. The cephalothorax is wrinkled and indented, and rather humped in the middle.

The spider is glossy and dark brown, the abdomen being the darkest, and the falces and maxillæ the palest.

The gills are yellowish.

The legs are yellowish-brown.

The male is  $\frac{1}{14}$  inch.

**\*\* 35. *Neriëne sulcata*.** The female is not yet described. The middle eyes of the front row are much smaller than the rest. The falces are rounded in front

and spreading. The maxillæ are widened at the insertion of the palpi. The breastplate is broad. The cephalothorax is oval, and has a slit-like dent behind the lateral eyes and a slight dent in the middle.

The spider is glossy, and of a blackish colour. The abdomen is slightly hairy. The maxillæ are rather paler than the rest, and the falces have a red tinge. The gills are yellow.

The legs are hairy and reddish-brown.

The male is  $\frac{1}{16}$  inch.

\*\*\* *Abdomen without markings.*

*Colour nearly uniform in depth.*

*Eyes on black spots.*

\*\*\* 36. *Neriène rubens*. The falces have strong teeth. The cephalothorax is high in front, and indented.

This spider is glossy and of a yellowish colour, and the abdomen is slightly hairy and reddish-brown. The gills are pale orange.

The legs are hairy, slightly spinous, and yellowish-red. In the male the tibiæ are enlarged beneath, where they are covered with long hairs. The female palpi are of the same colour as the legs, and have many black spines.

The female is  $\frac{1}{8}$  inch. The male rather less.

Found among heath and grass in the North of England and Wales.

\*\*\* 37. *Neriène rubella*. (Plate XII. fig. 4 ♂.) The middle eyes of the front row are much smaller than the rest. The falces are strong. The breastplate is broad and convex. The cephalothorax is indented, and contracted towards the face, where it is prominent, especially in the male.

The spider is glossy and of a yellow-red colour, the

abdomen more or less bright in different specimens. The lip is reddish-brown, the gills yellowish.

The legs and female palpi are rather paler than the body.

The female is  $\frac{1}{10}$  inch.

\*\*\* 38. *Neriëne pilosa*. (Plate XII. fig. 5 ♀.)

The shield is pale brown, with fine black edges, an interrupted black longitudinal line behind the eyes, and in the middle where it sends out radiating dark lines. The abdomen is pale yellowish-brown above, and is covered with black hairs. Below, the abdomen is blackish, with a paler patch. The breastplate is pale brown.

The legs are hairy, spinous, and brown, with yellowish joints.

The female is  $\frac{1}{8}$  inch.

\*\*\*\* *Abdomen bearing a pattern.*

a. *Eyes on black spots.*

b. *Eyes not on black spots.*

\*\*\*\* 39. *Neriëne trilineata*. (Plate XII. fig. 6 ♀.)

The middle eyes of the front row are the smallest, and are on a slightly prominent part of the shield. The falces are gibbous in front. The breastplate has prominences. The cephalothorax is contracted towards the face and wrinkled, with a large indentation.

The spider is glossy. The shield is yellowish-brown, black at the edges and down the middle. The abdomen is slightly hairy, whitish or pink in colour. It has three dark lines running down it. The middle of these branches slightly, and tapers towards the spinnerets. The lateral stripes are composed of spots more or less confluent. The ground is covered with a fine network pattern. The male is *rather paler* than the female.

Below, the abdomen is dark brown with yellowish spots. The breastplate is yellowish-brown; the maxillæ, falces, and lip reddish-brown; the maxillæ and tip of the lip being pale. The gills are yellow with dark edges.

The legs are hairy, spinous, and pale, with dark rings. The palpal claw of the female is toothed.

The female is  $\frac{1}{4}$  in.; the males less.

\*\*\*\* *a.* 40. *Neriëne variegata*. The falces are long and spreading. The breastplate is broad. The abdomen is very high. The cephalothorax is contracted towards the face, is wrinkled and indented.

This spider is of a yellowish colour. The shield is glossy, dark at the edges and down the middle, with a row of dark spots down each side, and a black triangle behind the eyes. The abdomen has a black mark down it, widest in the middle, or somewhat cross-shaped, which does not reach to the spinnerets, and is succeeded by a series of curved transverse lines, at each side of which is a row of black spots. The sides of the abdomen are streaked and blotched with black. It is brownish below. The breastplate and lip are darker than the shield, maxillæ, etc.

The legs are hairy, spinous, and of a yellowish colour.

The female is  $\frac{1}{10}$  inch. The male rather less.

\*\*\*\* *a.* 41. *Neriëne herbigrada*. The middle eyes of the front row are the smallest and darkest of all. The falces are strong and spreading. The cephalothorax is indented.

The spider is glossy. The shield is brown. The abdomen is rather paler, faintly spotted with darker colour, and hairy. Below, the abdomen is darker than above. The breastplate and lip are darker than the shield; the maxillæ and falces are paler and are reddish.

The legs are hairy, and of a yellowish-brown.

The female is  $\frac{1}{4}$  in.

b. *Eyes not on black spots.*

\*\*\*\* b. 42. *Neriëne marginata*. The two middle eyes of the front row are the smallest, and those of the hinder are the largest of all. The falces are rather spreading, and in the male are of a peculiar form, one tooth is very large, and there are two projections on the base of each falx. The abdomen of the male is slender. The cephalothorax is long, indented, and high in front.

The shield is blackish. The upper part of the abdomen is blackish, and is surrounded by an uneven pale band, spotted with white. Down the middle runs a pattern of angular pale lines. These markings are sometimes nearly wanting in the male. The sides of the abdomen are blackish, with white spots; and the under side is dark, with four small white spots forming a square. The breastplate, etc., are blackish. The gills are dark reddish-brown, and there is a prominence between them.

The legs are spinous, reddish-brown, with darker rings, which are sometimes lost in the male when old. The palpal claw of the female is curved and simple.

The female is  $\frac{1}{8}$  inch.

This spider makes its web upon grass. It resembles the webs of the *Linyphiæ*.

\*\*\*\* b. 43. *Neriëne errans*. (Plate XII. fig. 7 ♂.) The eyes are small. The falces are convex in front. The cephalothorax is indented.

The spider is glossy. The shield is brown. The abdomen is slightly hairy, and of a greenish-brown, with a stripe down the middle of the upper side, formed of pale

angular lines. The breastplate is paler than the shield, and is brown; the lip, maxillæ, and falces are darker and slightly reddish. The gills are yellowish-brown.

The legs are long, hairy, spinous, and paler than the shield.

The female is  $\frac{1}{8}$  in. The male less.

\*\*\*\* *b.* 44. *Neriëne pulla*. The female is not yet described. The cephalothorax is slightly wrinkled and indented. The shield is glossy, dark brown. The abdomen is slightly hairy, and pale brown, with darker streaks and speckling. The breastplate is glossy brown, with dark specks. The lip, maxillæ, and falces are dark reddish-brown. The gills are pale yellow.

The legs are reddish-brown.

The male is  $\frac{1}{11}$  in.

\*\*\*\* *b.* 45. *Neriëne affinis*. (Eyes, Plate II. fig. 26.) The female is not yet described. The two middle eyes of the front row are the smallest and darkest. The falces are convex in front, and spreading. They are covered in front with small pointed prominences, and have a pointed appendage in front, about the middle. The maxillæ are convex in front, have a pointed projection at the outside of the tip, and are widened at the insertion of the palpi. The breastplate is broad. The abdomen has four pits. The cephalothorax is slightly wrinkled and indented.

The shield is glossy, reddish-brown, much the darkest in front. The abdomen is dark olive, with a pattern of faint transverse lines down the middle. Below, the abdomen is paler than above. The breastplate, maxillæ, and falces are reddish-brown. The lip is darker. The gills are yellow.

The legs are hairy and bright red.

The male is  $\frac{1}{7}$  in.

\*\*\*\* *b.* 46. *Neriëne munda*. The two middle eyes of the front row are the smallest. The falces have a projecting appendage on the inner side of the tip in front. The maxillæ are much widened at the insertion of the palpi. The cephalothorax is slightly indented.

The spider is glossy. The shield is reddish-brown, in the female dark in front. The abdomen is slightly hairy, and in the male is blackish, or sometimes yellowish-brown. In the female it is dark brown above, with a pale longitudinal stripe down the middle, on which is a faint, pale, transverse band. Below, the abdomen of the female is brownish-yellow. Of the male blackish. The breastplate and lip are reddish-brown, the maxillæ and falces more red. The gills are whitish.

The legs are pale red.

The female is a little more than  $\frac{1}{8}$  in. The male  $\frac{1}{8}$  in.

\*\*\*\* *b.* 47. *Neriëne pallidula*. The cephalothorax is contracted towards the face.

The shield is pale brown, with black edges and radiating dark lines. The abdomen is yellowish-grey, and has a dark mark of a dagger shape about the middle, and sometimes on the hinder part has three double dark lines meeting at the spinnerets. The sides and under part of the abdomen are dark, the middle being paler. The breastplate is pale brown, with black edges.

The legs are hairy, spinous, and pale.

The female is  $\frac{1}{10}$  in.

\*\*\*\* *b.* 48. *Nerëine carinata*. The cephalothorax is nearly circular, and is keeled down the middle, its sides are much flattened.

The shield is brown, with black edges and radiating black lines. The abdomen is hairy, dark grey above,



marked with undulating whitish lines. Below, the abdomen is black. The breastplate is brownish-black.

The legs are hairy, spinous, and brown.

The female is  $\frac{1}{8}$  in.

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### Genus III. WALCKENAËRA.

*Eyes.* The four middle form a square, or a four-sided figure, with the longest side behind. Two on each side are very near together or in contact. The eyes are sometimes placed on one or more remarkably elevated parts of the cephalothorax.

*Falces.* Usually conical; sometimes spreading; toothed on one edge.

*Maxillæ.* Widened at the insertion of the palpi, leaning or curving towards the lip.

*Lip.* Semicircular and projecting at the tip.

*Legs.* Long and not thin; order of length  $\frac{1}{4}$  (or nearly equal) 2 3.

*Claws of feet.* Three. The two upper toothed, the lower plain.

*Cephalothorax.* Usually oval. Sometimes there is in the male, or in both sexes, on the front of the cephalothorax one (\*) or two (\*\*) remarkably elevated parts on which the eyes are seated. Sometimes in the male the eyes surround (\*\*\*) a small protuberance or excrescence, and in some species (\*\*\*\*) the cephalothorax has no remarkable elevations or excrescences in either sex. (See Plate II. fig. 29, 30, *W. acuminata*; 31, *W. unicornis*; 32, *W. aggeris*; 33, *W. ludicra*.)

*Abdomen.* Egg-shaped, overhanging the cephalothorax, convex above (except in *W. depressa*).

*Breastplate.* Heart-shaped.

*Length of female from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch.*

These little spiders are all (with the exception of *W. ludicra*, which is of a pale-brownish-yellow) dark in colour, and without any marked pattern on the abdomen, *W. turgida* and *exilis* alone having faint mottling and spots. In most cases the legs are of a more or less bright red or yellow, or reddish or yellowish-brown.

\* *The cephalothorax of the male or of the male and female, with a remarkably elevated part, on which are placed some or all of the eyes.*

\* 1. *Walckenaëra acuminata*. (Plate XIII. fig. 1 ♀ ; eyes and cephalothorax, Plate II. fig. 29 ♂, 30 ♀). In the male there is a high slender thread-like excrescence standing upright on the fore part of the cephalothorax, measuring more than half the length of the shield. On the summit (which is enlarged) of this are placed two pairs of eyes, and about the middle, which is also enlarged, are the two remaining pairs placed laterally.

In the female the shield is very convex in the middle, and the eyes are seated on a sharp conical protuberance.

The spider is glossy. The cephalothorax blackish, the abdomen black and rather high in front. The breastplate is a long heart-shape, and, with the lip, falces, and jaws, resembles the cephalothorax in colour. The gills are pale yellow.

The legs and female palpi are bright red ; the latter have no claws.

The female is about  $\frac{1}{7}$  inch. The male less.

The cocoon of this singular spider is flat on one side, rounded on the other, about  $\frac{1}{4}$  inch in diameter, and composed of a slightly-woven white silk. The eggs are yellow. It is found in autumn on the under side of stones, etc.

\* 2. *Walckenaëra obtusa*. The female is not yet described. In the male the eyes are placed on a high blunt elevation of the cephalothorax, which is convex and slopes down behind.

The spider is blackish. The cephalothorax is a dark blackish colour, the abdomen black. The breastplate is a long heart-shape, and, with the lip, maxillæ, and falces, resembles the cephalothorax in colour.

The legs and palpi are red.

The male is  $\frac{1}{7}$  inch.

\* 3. *Walckenaëra punctata*. The side eyes are the largest, and the middle front eyes are much smaller than the rest. In the male the eyes are placed on a part of the cephalothorax which projects upward and forward, and each side-pair of eyes has a dent behind it. In the female, the cephalothorax is rather prominent in front.

The spider is glossy. The shield is dark brown, with prick-like marks on the margins, and forming radiating lines from the middle; and the abdomen is nearly black. The breastplate is marked with pricks, and, with the lip, is dark brown. The falces and maxillæ are dark reddish-brown. The gills are yellowish.

The legs and palpi are hairy and red.

The female is  $\frac{1}{10}$  inch. The male smaller.

Found under stones.

\* 4. *Walckenaëra obscura*. The female is not yet described. The cephalothorax of the male is high in front, and slopes down behind. The two hinder eyes are on an abrupt prominence on the top of the fore part of the shield.

The spider is glossy and blackish.

The legs and palpi are reddish-brown.

The male is  $\frac{1}{14}$  inch.

\* 5. *Walckenaëra flavipes*. In the male, two eyes are at the top of the front side of a distinct upright, flat-topped prominence on the cephalothorax. There is a dent behind each side pair of eyes. In the female, the cephalothorax is only slightly elevated.

The spider is glossy. The shield is blackish, and the abdomen is black. The breastplate is broad, and, with the lip, etc., resembles the cephalothorax in colour.

The legs and female palpi are dull yellow, slightly reddish. The male palpi are reddish-brown.

The female is  $\frac{1}{7}$  inch.

\* 6. *Walckenaëra atra*. The two middle front eyes are the smallest. The eyes of the male are on the fore part and sides of a blunt prominence on the top of the fore part of the shield, and there is a dent behind each lateral pair of eyes.

The spider is glossy and black. The breastplate is broad. The maxillæ and falces dark brown.

The legs and female palpi are a rather pale brown, the male palpi reddish-brown.

The female is  $\frac{1}{14}$  inch. The male rather less.

\* 7. *Walckenaëra aggeris*. (Eyes and cephalothorax, Plate II. fig. 32.) The cephalothorax is very high in front, and slopes greatly to the base. The eyes are in pairs, forming a square, or rather the figure of a diamond. The eyes of the hinder pair are a little further apart than those of the front. The eyes forming the lateral pairs are oblique, in contact, and raised on a very small tubercle, and the space between the hind and front pairs is hairy. In the male there is a dent behind each of the side pairs. The cephalothorax is long and oval.

The spider is somewhat glossy, especially the abdomen. The shield is dark brown. The abdomen black-

ish. The breastplate is broad and convex, and, with the lip, is dark brown. The falces and maxillæ are paler.

The legs and palpi are yellowish-red; the legs hairy, palest at the joints.

The female is  $\frac{1}{14}$  inch. The male rather less.

\* 8. *Walckenaëra hiemalis*. The cephalothorax is high in front, and rather so in the middle, whence it slopes greatly to the base. The middle eyes of the hind pair are further apart than those of the front, and, in the male, there is a deep dent behind the side eyes.

The spider is glossy. The shield is blackish, and the abdomen is black. The breastplate is broad, and, with the lip, resembles the shield in colour. The falces and maxillæ are rather paler. The gills are brown.

The legs and female palpi are reddish-brown.

The female is  $\frac{1}{15}$  inch. The male less.

\* 9. *Walckenaëra bicolor*. The female is not yet described. The cephalothorax is prominent and blunt in front, with a dent behind each side-pair of eyes, and a small one about the middle.

The shield is brown, the abdomen blackish. The breastplate is broad, and, with the falces and maxillæ, resembles the shield in colour. The lip is darker. The gills are pale yellow.

The legs are pale brown.

The male is  $\frac{1}{14}$  inch.

\* 10. *Walckenaëra depressa*. The cephalothorax is high and convex in front, sloping greatly thence to the base. It is short and oval. The abdomen is broad and flattened at the upper side.

The spider is glossy, and covered with prick-like markings. The shield is dark brown. The abdomen is blackish. The maxillæ and falces are much paler than

the breastplate and lip, which resemble the shield in colour. The gills are dark brown.

The legs and palpi are of a rather reddish-brown.

The female is  $\frac{1}{16}$  inch. The male less.

\* 11. *Walckenaëra pratensis*. (Plate XIII. fig. 2 ♂.)

The cephalothorax is wrinkled and indented, and in the male is high and large in front, with a dent behind each lateral pair of eyes. The middle eyes of the front row are the smallest, and are nearer together than those of the hind row. The lateral eyes are on a tubercle, are oblique and in contact.

The spider is glossy. The shield is dark reddish-brown, darkest at the edges, the abdomen blackish. The breastplate is broad and convex, and dark reddish-brown. The lip, falces, and maxillæ are brownish-red. The gills are pale yellow.

The legs and female palpi are yellowish-red.

The female is  $\frac{1}{8}$  inch. The male less.

\* 12. *Walckenaëra humilis*. The cephalothorax is wrinkled and indented. In the male it is high at the top and projects in front, where it is covered with short hairs, and slopes from the middle to the base. The eyes are placed in the highest part. The middle eyes of the front row are much the smallest of all, and are much nearer together than those of the hind; and the eyes of each lateral pair are in contact.

The spider is brownish-black, the falces and maxillæ being browner than the other parts.

The legs are strong, and, with the palpi, are of a reddish-brown colour.

The female is  $\frac{1}{16}$  inch.

\* 13. *Walckenaëra vafra*. The female is not yet described. The cephalothorax has a strong upright pro-

jection, rather flat at the sides and hairy at the top, where is the upper pair of eyes. The remaining three pairs are below, the eyes of the lateral pairs being oblique.

The spider is glossy. The raised part of the shield is dark brown, with a reddish tinge; the rest is brownish-red, and the abdomen is blackish. The breastplate is broad, and, with the lip, falces, and maxillæ, of a brownish-red. The gills are whitish.

The legs and palpi are bright yellowish-red.

The male is  $\frac{1}{16}$  inch.

\* 14. *Walckenaëra pumila*. The middle eyes of the front row are the smallest, and are nearer together than those of the hind. The lateral eyes are the largest. The cephalothorax is wrinkled and indented. In the male the shield is very high in front, slopes suddenly from the top, rises slightly in the middle, and thence slopes to the base, and has a dent behind each lateral pair of eyes.

The spider is glossy. The shield is dark brown, the abdomen blackish. The breastplate is broad, and, with the lip, resembles the shield in colour. The falces and maxillæ are paler. The gills are dull yellow.

The legs and female palpi are reddish-brown.

The female is  $\frac{1}{16}$  inch. The male rather less.

\* 15. *Walckenaëra picina*. The female is not yet described. The front part of the cephalothorax is very high, and there is a large dent behind each lateral pair of eyes. One pair of eyes is at the top, in front of the prominence; another pair is lower down, the eyes being nearer together and the smallest of all, and the lateral eyes are in contact. The shield slopes from the middle to the base.

The spider is glossy, and brownish-black. The falces and maxillæ are paler than the other parts, and the gills are brown.

The legs are reddish-brown.

The male is  $\frac{1}{4}$  inch.

\*16. *Walckenaëra ludicra*. (Plate XIII. fig. 3 ♂ ; Plate II. fig. 33, eyes and cephalothorax.) In the male there is a very large and high eminence on the fore part of the cephalothorax. It is rounded at the top and leans backward, being hollow behind and flattened at the sides. Two eyes are at the top of this, in front, and rather far apart; the other six are much lower down, and almost in a line, except that the lateral pairs are placed obliquely. This remarkable form is not present in the female.

The spider is glossy, and of a pale dull yellowish colour. The front and margins of the shield are dark brown. The breastplate is brown at its edges, the lip being dark. The falces and maxillæ resemble the shield in colour.

The legs are pale dull yellow, the tibix of the first and second pairs being brownish.

The female is  $\frac{1}{8}$  inch. The male less.

\* 17. *Walckenaëra frontata*. The female is not yet described. The cephalothorax is long; it is protracted upwards and a little forwards into a point terminated by a tuft of hairs. At the top of this in front are two dark eyes, which it is difficult to find; a pair is on each side at the base of the prominence, and four are in a line at the base of and *behind* the prominence.



Fig. 30.  
Cephalothorax of *Walckenaëra frontata* ♂.



The spider is glossy. The shield is blackish, and the abdomen black. The breastplate and lip are of the same colour as the shield, the falces and maxillæ slightly reddish.

The legs and palpi are reddish-brown.

The male is  $\frac{1}{12}$  inch.

This spider is aeronautic in its habits.

(\**W. fuscipes* has two prominences not very distinctly divided. See below.)

\*\* *The cephalothorax of the male with two prominences, on which are placed some of the eyes.*

\*\* 18. *Walckenaëra fuscipes*. The female is not yet described. The front of the cephalothorax is prominent and flattened at the sides, and has a second high roundish prominence above it, with a groove or cavity on each side and in front. One pair of eyes is on the top of the highest part. One pair closer together on the most projecting part of the lower prominence, and on each side of this is a pair of eyes in contact with each other.

The spider is glossy. The shield is brown, the abdomen blackish. The breastplate, lip, falces, and maxillæ are brown, the gills pale yellow.

The legs are brown.

The male is  $\frac{1}{12}$  inch.

\*\* 19. *Walckenaëra parallela*. The fore part of the cephalothorax of the male has a rounded prominence on the top, and another immediately below it in front. Two eyes are in front of the upper, two more on the front of the lower prominence; and on each side of these, but placed obliquely, is a pair of eyes with a dent behind them. From the base of the upper prominence

to the base of the cephalothorax is a gradual slope. In the female the cephalothorax is prominent in front, and slopes to the base.

The spider is covered with prick-like markings. On the shield, which is dark brown and glossy, they form lines radiating from the centre. The abdomen is blackish, and has besides the prick-marks four conspicuous pits, of which those forming the hinder pair are the widest apart. The breastplate is broad, glossy, and prick-marked, and, with the lip, is dark brown. The maxillæ and falces are paler.

The legs are yellowish-red.

The female is  $\frac{1}{4}$  inch. The male is smaller.

**\*\* 20. *Walckenaëra turgida*.** The male has two large prominences side by side on the fore part of the cephalothorax. Behind each of these is an eye. The other eyes are in front of the cephalothorax below these prominences. The cephalothorax of the female is a little prominent in front behind the eyes.



Fig. 31.  
Cephalothorax  
and eyes of  
*W. turgida*.

The cephalothorax is glossy, dark brown; the abdomen brown, with indistinct darker mottling. The breastplate is broad, and, with the lip, is dark brown. The falces are dark, and the maxillæ lighter reddish-brown. The gills are pale yellowish-brown. The male is darker than the female.

The legs are reddish-brown.

The female is  $\frac{1}{3}$  inch.

**\*\* 21. *Walckenaëra bifrons*.** The female is not yet described. On the cephalothorax of the male is a large high, blunt, compressed prominence, which is cleft longitudinally at the top. Two eyes are on a tubercle on the upper part of the prominence in front; below these

are the two smallest of the eight, and on each side of the prominence near the front are two eyes in contact with each other. The cephalothorax projects again below the eyes and above the falces.

The spider is dark brown, the prominence on the shield being very dark, as is the lip. The gills are dull yellow.

The legs are yellowish-red.

The male is  $\frac{1}{14}$  inch.

**\*\* 22. *Walckenaëra cristata*.** In the male the fore part of the cephalothorax is high, and ends in two small, high, crested prominences, standing one before the other. One pair of eyes is at the top of the hinder of these at its back. A pair of smaller eyes, which are closer together, is



Fig. 32.  
Cephalothorax and eyes of  
*W. cristata*.

at the top of and in front of the smallest prominence, and there is a pair of large eyes in contact with each other on each side. In the female the cephalothorax is prominent in front.

The spider is glossy. The cephalothorax is blackish. The abdomen black. The breastplate, lip, and falces resemble the cephalothorax; the maxillæ are rather brown. The gills and spinnerets are dull yellowish-brown.

The legs are red-brown.

The female is  $\frac{1}{11}$  inch.

**\*\* 23. *Walckenaëra antica*.** (Plate XIII. fig. 4 ♀, fig. 4 a ♂.) In the male there is a large roundish protuberance on the top of the fore part of the cephalothorax, in front of which is a much smaller conical projec-

tion, near the tip of which are two small processes curving upwards. One pair of eyes is on the top of the large rising. One pair of smaller eyes is at the base of the smaller conical projection, and on each side of this is a pair. In the female the cephalothorax is convex and wrinkled, and without these remarkable prominences.

The spider is glossy and blackish. The maxillæ are reddish-brown, and the gills yellow.

The legs are reddish-brown, the tibiæ of the first and second pairs being dark.

The female is  $\frac{1}{10}$  inch.

**\*\* 24. *Walckenaëra fastigata*.** The female is not yet described. The cephalothorax has a large prominence in front, and above that a smaller, distinct, round prominence, a little dented in the middle, and inclining slightly forward. On the top of this is one pair of eyes; another pair is below them on the lower prominence, and on each side of these is a pair on a small tubercle.

The spider is glossy. The cephalothorax is dark brown, palest at the base. The abdomen is blackish. The breastplate, lip, maxillæ, and falces resemble the shield in colour.

The legs and palpi are yellowish-red.

The male is  $\frac{1}{8}$  inch.

**\*\* 25. *Walckenaëra nemoralis*.** The female is not yet described. The cephalothorax of the male has a blunt projection in front, and a large roundish projection on the top. On the top in front of this is one pair of eyes. Another and smaller pair is on the front of the lower projection, and there is a pair on each side of these.

The shield is brown, darkest in front, and the abdo-

men, which is broader behind than before, is glossy and blackish. The shield falces and maxillæ are brown. The lip darker. The gills are dull yellow.

The legs are paler than the rest of the spider.

The male is  $\frac{1}{16}$  inch.

\*\*\* *The fore part of the cephalothorax of the male bearing a minute protuberance or excrescence which is surrounded by the eyes.*

\*\*\* 26. *Walckenaëra cuspidata*. The cephalothorax is highest in front and sloping to the base. In the male a minute tufted excrescence grows in front of the highest part. One pair of eyes is immediately behind this, the others are on each side and below.

The spider is glossy. The cephalothorax is blackish. The abdomen black. The breastplate, etc., are blackish. The gills are pale yellow.

The legs and palpi are red.

The female is  $\frac{1}{16}$  inch. The male rather less.

\*\*\* 27. *Walckenaëra monoceros*. The female is not yet described. The cephalothorax is very prominent, and not very high in front. The small excrescence, which is hairy, is at the top of the fore part, and curves downwards. The pair of smallest eyes is behind this; one pair is on each side, and the pair of darkest is below.

The shield is glossy, reddish-brown, darkest in front. The abdomen is dark yellowish-brown. The breastplate and falces are reddish-brown. The lip is darker, and the maxillæ are paler and yellowish-brown. The gills are whitish.

The legs are reddish-yellow.

The male is  $\frac{1}{12}$  inch.

\*\*\* 28. *Walckenaëra Hardii*. The female is not yet

described. The cephalothorax is high in front, with a small upright protuberance on the highest part, around which are the eyes. The eyes of the front pair are the smallest, and are nearer together than those of the hind, behind which is a tuft of hairs. The lateral eyes are the largest, and are placed obliquely.

The cephalothorax is reddish-brown. The abdomen blackish. The breastplate, maxillæ, and falces resemble the cephalothorax in colour, and the lip is darker. The gills are yellowish-brown.

The legs are light reddish-brown.

The male is  $\frac{1}{6}$  inch.

\*\*\* 29. *Walckenaëra unicornis*. The female is not yet described. The cephalothorax is high in front, and has a small upright protuberance, cleft at the top, on the highest part. Around this are the eyes. The eyes of the first pair are the smallest, and are nearer together than those of the hind. The eyes of the lateral pairs are in contact, oblique, and placed on a small tubercle.

The spider is glossy. The shield is dark reddish-brown. The abdomen blackish. The breastplate dark reddish-brown. The falces, maxillæ, and lip are brownish-red; the lip being darkest. The gills and spinnerets are whitish.

The legs are dark reddish-brown.

The male is  $\frac{1}{10}$  inch.

\*\*\* *W. antica*. See *ante*, page 214.

\*\*\*\* *The cephalothorax without any remarkable elevation or exorescence in either sex.*

\*\*\*\* 30. *Walckenaëra parva*. The cephalothorax is convex above. In the male there is a dent behind each pair of lateral eyes.

The spider is glossy. The shield brown, darkest at the edges. The breastplate and maxillæ resemble the shield in colour. The falces and lip are darker. The gills are brown.

The legs are brown.

The female is  $\frac{1}{16}$  inch. The male less.

\*\*\*\* 31. *Walckenaera exilis*. The female is not yet described. The cephalothorax is rather prominent in front and slopes down behind. The eyes are on black spots. Those of the front pair are much the smallest, and are nearer to each other than those of the hind. The lateral eyes are the largest, are on a tubercle, oblique, and in contact.

The shield is glossy and dark brown. The abdomen is small, hairy, and yellowish-brown, with faint darker markings. The breastplate is greenish. The maxillæ are pale brown. The lip and falces darker.

The legs are pale brown.

The male is  $\frac{1}{8}$  inch.

\*\*\*\* 32. *Walckenaera saxicola*. The cephalothorax is contracted towards the face, rounded, and slightly prominent in front, especially in the male. The middle eyes of the front row are the smallest, and are nearer together than those of the hind row. The lateral eyes are on tubercles, oblique, and in contact.

The spider is glossy. The shield is dark brown. The abdomen blackish. The maxillæ resemble the shield in colour, and the breastplate and lip are darker. The falces are yellow-brown.

The legs are pale brown, the tibiæ of the first and second pairs being dark.

The female is  $\frac{1}{14}$  inch. The male less.

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Genus IV. PACHYGNATHA.

*Eyes.* Four in the middle form a square, and on each side is a pair of eyes obliquely set on a tubercle, and nearly in contact. (Plate II. fig. 34.)

*Falces.* Very large; spreading widely; convex in front; toothed on one edge. The falces in the male make two distinct curves, one from the base to the middle, and a similar curve from the middle to the lip. (Plate II. fig. 34.)

*Maxillæ.* Long; suddenly curved; meeting beyond the lip.

*Lip.* Large and triangular.

*Legs.* Long and thin; order of length 1 4 2 3.

*Claws of feet.* Three. The upper two toothed, the lower plain.

*Palpal claw* of female toothed.

*Cephalothorax.* Large, contracted towards the face; indented, and covered with prick-like markings.

*Abdomen.* Egg-shaped, convex above and overhanging the cephalothorax.

*Breastplate.* Heart-shaped, and covered with prick-like markings.

*Length of female* from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch.

1. *Pachygnatha Clerckii.* (*Eyes*, Plate II. fig. 34.) The shield is glossy. It is pale reddish-brown with three long dark stripes running down it, and a small one behind each pair of side eyes. The abdomen is yellowish olive-brown above. A long yellow stripe, partly edged with black, and having a fine black line on it, runs down the middle; and a dull yellow stripe runs along each side.

Below the abdomen is yellowish-brown, and a yellow-edged dark band runs down the middle. The gills are



yellow. The colours of this spider are variable, and the contrasts much stronger in the male than in the female.

The legs are pale brown.

The female is  $\frac{1}{4}$  inch. The male less.

2. *Pachygnatha Listeri*. The spider is of a reddish-brown colour. The shield is glossy, and has a black stripe down the middle, and dark spot near the edges. The abdomen has a pattern of white angles running down the middle. The sides have a yellowish band, lightest above and growing darker at its lower edge, running along them. On the under side of the abdomen are two faint yellowish stripes, and the gills are yellowish. The breastplate is yellowish-brown.

The legs are pale brown.

The female is  $\frac{1}{8}$  in. The male less.

3. *Pachygnatha Degeerii*. (Plate XIII. 5 ♀, 5 ♂.)

The cephalothorax is dark brown. The upper part of the abdomen is olive with an uneven black line round it. A small white streak runs from the base towards the middle, and is followed by a small black one with short slanting white lines on each side of it. The sides have a yellowish band down them, of which the upper edge is palest. On the under side are two faint yellow stripes. The gills are dull yellowish-brown. The breastplate is darker than the shield.

The male is darker than the female, and more clearly marked.

The legs are yellowish.

The female is  $\frac{1}{7}$  inch. The male less.

This spider has been found in the north of England and Wales, in Cambridgeshire, in Scotland and in Ireland.

## FAMILY X. EPEÏRIDÆ.

## Genus 1. EPEÏRA.

*Eyes.* In three groups. Four are arranged in a square or a nearly square figure, having on each side two placed on a tubercle. The four middle eyes \*, or the two front middle eyes \*\*, are sometimes on a prominent part of the cephalothorax. (Plate II. fig. 35, *E. conica*.)

*Falces.* Conical; with one row of teeth.

*Maxillæ.* Short; strong; small at the base; large and rounded at the tip.

*Lip.* Semicircular, somewhat pointed, except in *E. bicornis*, where it is triangular.

*Legs.* Long, the third pair the shortest. The haunch of the male sometimes bearing a conical process (*E. ceropegia* and *E. diadema*).

*Claws of feet.* Three or more.

*Cephalothorax.* Contracted towards the face, convex and indented.

*Breastplate.* Heart-shaped, sometimes with prominences opposite the legs.

*Abdomen.* Overhanging the cephalothorax; oval, nearly globular, or flattened, or high above. Sometimes with one, two, or more humps or protuberances.

*Length of female from about  $\frac{3}{4}$  to  $\frac{1}{16}$  inch.*

The spiders of the family now under consideration are those which, to most people, represent the whole Order.

There is perhaps but a small proportion of non-scientific persons who would not answer a question as to the form and habits of "the spider" by a description of the hunchbacked *Epëira*, in his web of radiating and

spiral lines; either altogether overlooking other spiders and their snares, or treating it as an accidental circumstance that the "untidy, dirty cobweb"\* in the corner of the room, or the "ragged dusty cobweb"† clinging to the gate-post, without any visible owner or inhabitant, should in no degree resemble the beautiful structure in which the large garden spider suns his painted body on a summer day.

It has already been shown that these webs differ both in the character of the threads of which they are composed, and in the construction of the snares themselves; and, while the complicated curling threads of the *Ciniflo* may dispute the prize of beauty with the stringed gems of the *Epëira*, perhaps amongst not spiders only, but in all the Orders of the so-called "insect world" there is no architect whose structure would bear away the palm from the perfect web of the *Epëira*.

The typical form of the *Epëira* net is almost too well known to require description. There is an outline or framework of irregular shape formed of strong threads, placed nearly in one plane, and enclosing an area to be occupied by the net. Within this are lines varying in length according to the form of the outline, but all crossing at, or rather radiating from, one common centre. Each of these lines is composed of strands proceeding from more or fewer of the numerous spinning-tubes, and united in one compound thread. To the central point another thread is attached, which is drawn from radius to radius, ever advancing more or less regularly from the centre to the circumference, until a nearly circular area is occupied by a spiral thread intersecting radiating lines. Without this spiral thread are various irregular

\* See p. 132.

† See p. 114.

spaces, occasioned by the irregularity of form in the original framework.\*

The thread composing the spiral line is entirely different from that spun by any spiders except those belonging to the present family. It presents the appearance of a string of glittering beads, sometimes of uniform size, sometimes varying in size at uniform intervals, and sometimes presenting some irregularity of size and interval. A

more beautiful object than these threads, seen under a moderately high magnifying power, can hardly be found. † These

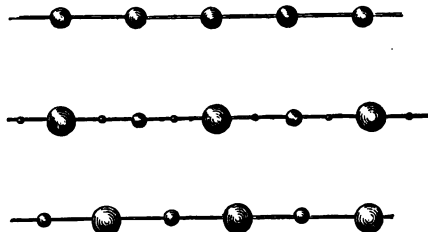


Fig. 33.

threads also differ from the radiating and foundation lines in being sticky, which the others are not, the glittering beads being globules of viscid matter, which does not harden on exposure to the air, as does that of which the other threads are composed. It is probable that it is partly lost by evaporation, as a web which has been made for some time presents a very different appearance from a new one which has not been much exposed to the heat of the sun; and this may perhaps be one cause of the apparent necessity for the constant repair and renewal of the web. In the very centre of the web, and for some little distance around it, the thread is not viscid

\* An account of the process by which one of these webs is made will be found under the *Epëira diadema*.

† The effect of this object is much heightened by the use of the parabolic condenser.

The web is highly elastic. This elasticity resides partly in the threads themselves (the radii, however, being less elastic than the spiral thread), and is much increased in the webs of some species by the removal of the centre, the spider, when the web is completed, biting the radiating threads round the point where they all meet, and leaving a small round hole. By this means the strain of any partial pressure upon the web is diffused, as it falls upon a flexible ring (or, rather, part of a spiral thread), instead of meeting the resistance of a tense chord. The same mechanical principle comes into operation at the circumference of the web, the outer ends of the radii being chiefly, as has been observed above, attached, not to stationary objects, but, to strong lines drawn at various angles (which are again supported by other and finer lines irregularly placed), in such a manner that a strain can never meet with a sudden and positive resistance, but is, as it were, communicated to and shared by all the surrounding parts.

It has been observed that these beautiful webs are constructed in their full perfection by young spiders, and also that the total exclusion of light appears in no degree to affect a spider engaged in forming a web. It is also said, but this is by no means certain, that a spider will roll the broken threads of an injured web into a pellet and swallow it.

Near the web the spider usually constructs a cell or nest, varying in form in the different species (as will hereafter be shown), and from this cell a strong line runs to the centre of the web, forming a bridge or pathway between the spider's place of concealment and his snare. This line also informs the spider of the arrival of a victim in the web, the motion of the web caused by

its struggles being thereby communicated to the spider in his retreat, a fact poetically treated by Pope in the lines :

"The spider's touch, how exquisitely fine!  
Feels at each thread, and lives along the line."

One species (*E. callophylla*) departs from the usual spiral plan of the web, leaving an isolated radius as its pathway. In this web, therefore, in place of the spiral line, is a series of incomplete circles, and the free radius is not always in the same plane as the other parts of the web. It is probable that there are other species in the webs of which distinct variations might be observed.

The spider, when not concealed in the nest, is usually found resting, head downwards, in the central and non-viscid part of his snare.

The webs are placed horizontally, obliquely or vertically, and in some species the position is sufficiently constant to form a specific character.

In form the *Epëiræ* are usually compact and frequently hunchbacked, the legs seldom so slender as in some other genera, and the third pair is always the shortest. The feet of the family (including *Tetragnatha*) have always three and sometimes more claws, and in some species there is, below the claws, a strong spine, which, having the power of motion towards them, acts as a thumb, and enables the animal actually to grasp his thread. But for the authority of Burckhardt and other Eastern travellers and scholars, who say that the name translated "spider" is that of a well-known lizard, it would appear that this fact was known by



Fig. 34.  
Foot of *E. diadema*.

Solomon:—"The spider taketh hold with her hands, and is in kings' palaces."

It is said that some of the *Epëiridæ* have been seen floating in the air by means of their threads.

1. *Epëira quadrata*. (Plate XIV. fig. 1 ♀.) The



Fig. 35.

Breastplate and palces of *E. quadrata*.

lateral eyes are nearly in contact. The maxillæ are very large at the tip. The abdomen is nearly globular. The cephalothorax is cut straight in front.

The shield is pale, with a dark stripe down the middle, which is broadest at the eyes, and one on each side.

The colour of the abdomen varies greatly both in hue and in depth in various species, being sometimes darker and lighter shades of a delicate sage-green, sometimes shades of pale or dark amber, to dark brown, and occasionally the spider presents a most beautifully blended mixture of dull green and amber or red. The spider is however easily recognized by its size, shape, and markings, the principal of which are four large oval whitish spots placed transversely or slightly obliquely. Those of the hind pair are rather the largest and from this pair a waving pale line runs on each side to the spinnerets. A chain of round and oval whitish spots, varying in size, runs down the middle and a similar chain sometimes round the fore part of the abdomen. There are whitish streaks and marks on the sides, and the abdomen below is orange-brown with a dark

stripe down the middle, on the front part of which is a yellow mark. The male is darker than the female. Occasionally the size of one or two of the spots in the medial line is such as to modify the character of the markings.

The legs are strong, hairy and spinous, and pale, with dark rings. There are several toothed claws.

The female is more than  $\frac{2}{3}$  inch. The male much less.

This spider is very beautiful, and may easily be found, by looking for the large white dome-shaped cell, which is formed in a conspicuous spot on a furze or other bush. This cell is connected by a strong silken line with the centre of the web. The cocoon is roundish, loose in texture, and of a yellow colour, containing yellow eggs. It is about  $\frac{2}{3}$  inch in diameter.

2. *Epēira signata*. Neither the female nor the perfect male is as yet described. The abdomen of the young male is short, broad, and rounded above. The cephalothorax is furrowed.

The shield is reddish-brown, deepest on the sides, and has a whitish spot in the middle towards the fore part. The abdomen is dark reddish-brown above, with fine lighter speckling, and has a pair of large whitish spots on the fore part. The sides are of a lighter colour and below the abdomen has a dark reddish-brown band, on which are two pale lines curving towards each other. The gills are dark reddish-brown. The breastplate is dark reddish-brown. The lip is much paler.

The legs are strong, hairy and spinous, and are pale, with dark speckling, lines, and rings. There are several foot-claws.

The male is about  $\frac{1}{4}$  inch.

3. *Epēira cucurbitina*. The four middle eyes form a



square. The lateral eyes are on a very small tubercle, and nearly touch each other. The maxillæ of the male have an angular projection. The cephalothorax is rounded above at the fore part, is cut straight in front, and has a large dent. The abdomen overhangs the cephalothorax much.

The shield is red-brown and, in the male, has a dark band on each side. The abdomen is green, with a red spot at the tip, and a curved line of small black spots on each side. The sides of the abdomen are dark green, as is the under part, where there are a few yellow spots and two faint yellow lines. The breastplate is red-brown. When first hatched the young are cream-coloured on the



Fig. 36.  
Cocoon of *E. cucur-  
bitina*.

cephalothorax and legs, and the abdomen is reddish-brown. Afterwards the abdomen becomes greener, with whitish spots and a whitish line on each side, and some fine black spots.

The legs of the female are reddish-brown. In the male they have red thighs and black rings.

The female is  $\frac{1}{4}$  inch. The male less.

The cocoon is  $\frac{3}{8}$  of an inch in diameter, roundish and of a bright yellow colour; it is concealed between leaves near the web, which is horizontal or oblique.

4. *Epeira adianta*. The four middle eyes form a square. The lateral eyes almost touch each other.

The shield is pale, with a fine dark line down the middle and one over each margin. The abdomen has on the upper side a large oval patch of rich brown,

finely mottled with cream colour, and bearing down the middle a series of pairs of angular cream-coloured spots with dark edges, diminishing in size and becoming united towards the spinnerets. The sides are cream-coloured, finely reticulated, and bearing oblique bands formed of fine irregular dark marks. Below, the abdomen is nearly black, with, on each side, a cream line followed by two cream-coloured spots. The breastplate is nearly black.

Legs pale, the ends of some of the joints dark.

The female is about  $\frac{1}{4}$  inch. The male less.

This is a very beautiful spider, owing to the richness of its colouring and its distinct markings.

\* *The four middle eyes on a projection of the cephalothorax.*

\*5. *Epēira apoclisa*. (Plate XIV. fig. 2 ♀.) The front pair of middle eyes are the largest of all, and are rather further apart than the hinder. The lateral eyes are oblique and not in contact. The breastplate has eminences. The abdomen is egg-shaped. The cephalothorax is wide in front.

The shield is reddish-brown, and is thickly clothed with whitish hairs on the fore part and edges. On the upper side of the abdomen is a large patch with undulating edges, broad in front and coming to a point at the spinnerets. It is blackish, mottled with yellowish colour. On the fore part of this patch is a yellowish triangular mark pointing forwards, in which lies a smaller dark mark of similar form. Behind this is a large yellowish cross-shaped mark, coming to a point at the spinneret, and having dark markings down the middle. The rest of the dark patch is crossed by yellowish transverse lines. The sides are yellowish with a dark toothed band mottled with yellowish colour running

down them. Below, the abdomen is blackish, with a yellow curved mark on each side of the middle. The breastplate is dark, the tip of the lip pale.

The legs are strong, hairy and spinous, yellowish-brown, with dark wings. There are several claws.

The female is about  $\frac{1}{2}$  inch. The male smaller and more slender.

The net formed by this *Epëira* is placed perpendicularly. It varies much in size, and is not invariably regular in its form. The male and female live together. The cell is of a dome-like shape, woven of close white silk, and it is said that the spider possesses the power of closing its orifice against intruders by seizing the sides with its hands. The eggs, which are pale-brown, are placed in this cell, enclosed in several slight roundish yellow cocoons, of size varying from  $\frac{1}{2}$  inch. The spider hibernates in this or a similar nest covered with dead leaves and closed by a silk curtain.

It is probably the deserted nests of this species of which Mr. Rennie says that he observed the harvest-mice or the dormice to make use in roofing their nests. He observed that every second or third mouse's nest in about a dozen, found in a copse in Kent in the winter, was roofed with the silken and leafy den of a spider.

\*6. *Epëira sericata*. (Plate XIV. fig. 3 ♀.) The front pair of middle eyes are the largest of all, and are rather further apart than the hinder. The lateral eyes are oblique and not in contact. The breastplate has prominences. The abdomen is oval and high in the female, more slender in the male. The cephalothorax is wide in front and its dent is large.

The shield is covered with whitish hairs, which form a fringe on the edges, and a line which, passing round

the hind pair of middle eyes, comes to a point in the centre of the shield. A fine longitudinal line of hairs runs from the front of this, dividing the pair of eyes; towards the base is a triangular space nearly free from hairs. The abdomen is dark brown above, with black speckling; a dark mottled patch with wavy cream-coloured edges, rounded in front and narrowing behind to a point, lies on it. On this patch a sharp point bordered with cream colour runs up quite to the base of the abdomen, behind which is a large pale cross, down the middle of which is a dark mark. On the hind part of the patch are whitish transverse curved lines. A space down the middle of the abdomen is bounded by white hairs. On each side is a dark speckled band, toothed along the upper edge. The abdomen is dark below, with two curved yellowish marks. The breastplate is dark brown with a reddish tinge, and some whitish hairs. The maxillæ and lip are of the same colour, with yellowish-brown tips. The gills are reddish-brown.

The legs are long, especially in the male, strong, hairy, and spinous, pale with dark rings.

The female is  $\frac{1}{2}$  inch. Male smaller and more slender.

\*7. *Epeira patagiata*. The front pair of middle eyes are the largest of all, and are rather farther apart than the hinder. The lateral eyes are oblique and not in contact. The breastplate has eminences. The abdomen is oval and rounded above. The cephalothorax is wide in front and its dent is large.

The shield is reddish-brown and is covered with whitish hairs, especially thickly on the front and edges. The abdomen is brownish-yellow above, with dark speckling. On the upper side is a large dark patch with wavy cream-coloured edges. On the front of this is a

dark triangular mark edged with cream colour, and behind this is a pale cross, on which lies an uneven dark mark. The hind part of this patch is transversely streaked. On each side is a dark mottled band, the upper edge of which is toothed. The abdomen is dark below, with two curved yellowish marks. The breastplate is reddish-brown, with a few whitish hairs. The palces are of the same hue, but much darker, the tips of the maxillæ and lips are much paler than the breastplate.

The legs are long, especially in the male, hairy, spinous, reddish-yellow, with dark rings.

The female is  $\frac{3}{8}$  inch. The male is smaller.

\*8. *Epeira scalaris*. (Plate XIV. fig. 4 ♀.) The front pair of middle eyes are a little further apart than the hind pair. The lateral eyes are very near together. The breastplate has eminences. The abdomen is large in the female, very much smaller in the male. It is oval and rounded above. The cephalothorax is cut straight across the front in the female but is more pointed in the male, and its dent is large.

The shield is pale dull yellow, with broad dark margins and a dark line down the middle. The abdomen is bright yellow, yellow, or whitish-yellow above, lightest in the middle, and deepening in colour towards the sides. On the hinder half is a large distinct rich brown patch of an irregular shape, with undulating edges, broad before and coming to a point near the spinnerets. Between this and the base of the abdomen are two (or four?) small round dark brown pits. The yellow space is surrounded by a mottled and obliquely-striped greyish or brownish and yellow band. Abdomen dark below, with a curved yellow mark on each side. Breastplate dark.

The legs are thick, hairy, and spinous, pale, with dark

rings. The feet have several toothed claws. The first and second pairs of legs have peculiar appendages in the male.

The female is about  $\frac{1}{2}$  inch. The male is less.

This handsome spider seems to be generally distributed in the midland and southern counties of England.

\*9. *Epëira umbratica*. (Plate XIV. fig. 5 ♀.) The front pair of middle eyes are the largest of all and are rather further apart than the hinder. The lateral eyes are oblique and not in contact. The abdomen is large and flat, with five or six pairs of deep pits. The cephalothorax is cut square in front and has a deep dent.

The spider is of a dingy browish-black above; a large space on the upper side, the edges of which are the darkest, is enclosed by a partially obsolete waved creamy line. There are some small faint light spots over the spinnerets, and on the under side is the usual pair of curved yellowish lines. The cream-coloured line is more continuous in the young than in the adult spider.

The female is about  $\frac{1}{2}$  inch. The male less.

The legs are hairy and spinous, and dark, with paler rings. There are several claws.

*Epëira umbratica* is a spider of most villainous aspect. It is of a large size, a flattened, crushed-looking shape, and a dingy colour. It has a peculiarly crouching gait, although its legs are more untidy and sprawling than is usual in the death-feigning spiders, and it has a horror of the light, which has led to its being supposed to be a rare species. Altogether it is impossible to mistake it for any other spider, or to look at it, when unwillingly dragged before the face of day, without thinking of Canning's apostrophe:—

“Thou lost old wretch, benighted by the noon!”

This treasure may be obtained by a very careful exa-

mination of the cracks in a brick wall, the bark of trees, and similar places, where its vicinity has been pointed out by the presence of its peculiar net. The net is re-

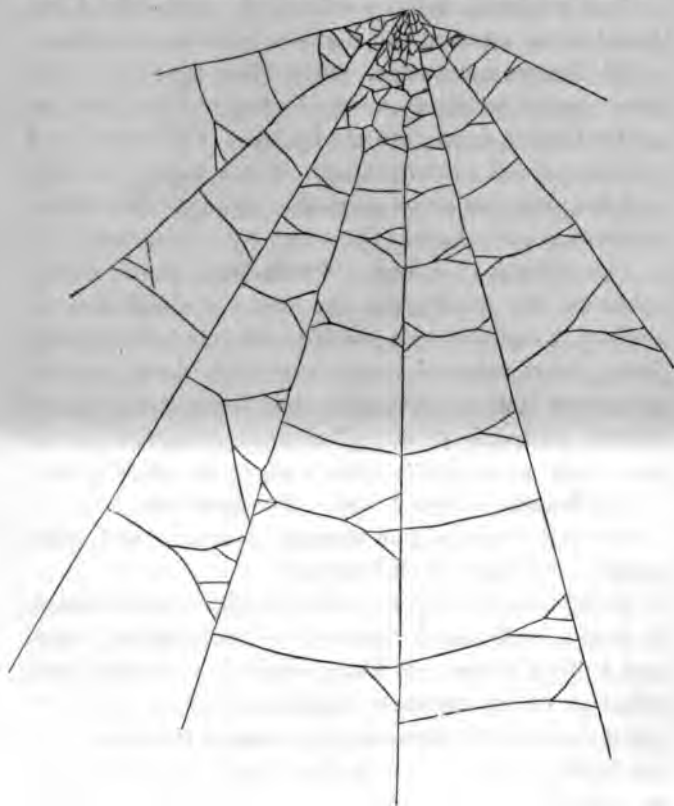


Fig. 37.—Web of *E. umbratica*.

markable for its large size and for that also of its meshes. It sometimes\* differs from the usual type of the *Epëira* net in not being divided by spiral lines, as in some

\* This is perhaps only in the case of a mended web.

species, nor, as in *callophylla*, by imperfect concentric circles. In these cases the meshes are formed by independent transverse lines between the radii, and these lines are frequently forked, bi-forked, and even tri-forked, sometimes so near the middle as to cause great irregularity in the form of the meshes. The centre of the web is composed of irregular small openings, amongst which the radii themselves are not traceable.

The proportion of the meshes, as regulated by the distances between the transverse threads, varies greatly in different webs, the transverse threads being in some webs so far apart as to make the meshes nearly square (as in Fig. 37), while in others the distance between the radii will be 4 or 5 times greater than that between the transverse threads.

The cocoon is roundish, white, and less than  $\frac{1}{2}$  inch in diameter, and has bits of wood, etc., attached to it. The eggs are brownish.

\*10. *Epeira agalena*. The four middle eyes are on a slightly projecting part of the cephalothorax, and form a square. The two hinder are the largest of all. The lateral eyes are oblique and not in contact. The breast-plate has small prominences. The abdomen is large, roundish, and greatly overhangs the cephalothorax. The cephalothorax slopes down behind.

The shield is glossy, reddish-brown, palest and yellowish in front. The abdomen is light reddish-brown, darkest in front, and with pale mottling. A faint dark wavy line encloses on the upper side a space which is broad in front and pointed behind. Outside the line are white spots, which come to a point in front. On the hinder part are dark transverse bars. The sides are striped obliquely. Below the abdomen is dark reddish-



brown down the middle, with a broad pale mottled band on each side. The breastplate is dark reddish-brown, as are the falces and the base of the lip, the maxillæ are lighter in colour.

The legs are hairy and spinous, the spines of the first pair being long in the male. They are yellowish-brown with dark rings. There are several claws.

The female is nearly  $\frac{1}{4}$  in. The male less.

The cocoon is yellow.

\*11. *Epëira ceropegia*. The four middle eyes form a square. The lateral eyes are oblique and nearly in contact. In the male (and female?) the maxillæ have an angular projection close behind the palpi.

The spider is thinly covered with whitish hairs. The breastplate is dark reddish-brown, palest in front. The abdomen is olive-brown. Down the middle runs a cream-coloured pattern deeply cut at the edges, and enclosing a dark strip speckled with cream-colour. The sides have an uneven cream-coloured line along them. Below there is one long cream-coloured spot. The breastplate is dark brown. The maxillæ, falces, and lip are dark reddish-brown, the two latter having pale tips.

The legs are long, hairy, spinous, reddish-brown, with faint darker rings. In the male the form of the second pair is peculiar, the shank being enlarged and very spinous, and the haunch of the first pair has a conical projection on the lower side.

The male is nearly  $\frac{1}{3}$  of an inch. The female much larger.

\*12. *Epëira lutea*. The front pair of mid eyes are rather further apart than the hinder, and the hinder are the largest of all. The lateral eyes are oblique. The breastplate has prominences.

The shield is a light yellowish-red, deepest down the sides, with dark edges and with three brownish lines drawn from the middle and lateral eyes to the dent. The abdomen is yellow, covered with a brownish-red network. On the upper side a brownish-red waving line, outside which is a pale border, encloses a space, broad in front and tapering behind. In this space are some small pale spots and faint transverse markings of pale yellow and brownish-red, and on the front half there are two pairs of dark brown pits, of which the hinder are the furthest apart. The sides are streaked obliquely, and are darkest on the upper part. Below the abdomen is reddish-brown, with two curved yellow marks. The breastplate is yellowish-red, with spots on the prominences and at the point. The falces, maxillæ, and lips are rather lighter in colour, the tips of the two latter being pale dull yellow.

The legs are pale yellowish-red, ringed.

The female is  $\frac{1}{4}$  in.

\*13. *Epeira solers*. The four middle eyes are on a small projection of the cephalothorax, and form a square. The lateral eyes are oblique and not in contact. The breastplate has small prominences. The abdomen is very broad, and overhangs the cephalothorax greatly.

The shield is dark brown, paler at the eyes, and is covered with long cream-coloured hairs. The abdomen is very hairy. It is brown above. A dark band with a wavy edge of long pale hairs runs down the middle, and is crossed by a series of similarly-bordered dark lines placed transversely, lessening in size towards the tip. On each side is a wavy line of long pale hairs. Below the abdomen is yellowish-brown, with darker spots and streaks. It is dark down the middle, and has two

curved yellow marks. The gills are brown. The breast-plate is covered with pale hairs. It is very dark, and has a pale line down the middle. The lip and maxillæ are dark, with paler tips.

The legs are hairy and spinous, yellowish-brown, with reddish-brown rings, which are broad in the male. There are several claws.

The female is rather less than  $\frac{1}{8}$  in. The male is less.

This spider constructs a hiding-place of white silk, which she connects by a strong thread with the centre of her web. The cocoon is formed in June and July. It is loosely woven, roundish, of a yellowish-brown colour, and about  $\frac{1}{2}$  in. in diameter.

\*14. *Epeira diadema*. (Plate XIV. fig. 6 ♀). The lateral eyes are placed one above the other, and nearly touch each other. In the male the maxillæ have a conical projection near the palpi. The abdomen, which is large, has a slight hump on each side near the fore part.

The shield is hairy, and in the female pale with dark lines on the edges, a dark stripe down the sides, and one in the middle, which is widest near the eyes. In the male these marks are fainter. The abdomen varies from a pale sandy yellow to dark blackish-brown. On the upper side is a large leaf-like patch, broad at the humps, tapering to the spinnerets, and bordered by a wavy line, dark on the inner and pale on the outer side. Down the middle of this runs a chain composed of cream-coloured spots, long, oval, and round. This is crossed (in a line with the humps) by another line of spots, or sometimes by a pair of large spots, forming a decided cross, which is the characteristic mark of this species, and it is less conspicuously crossed twice again

between this and the spinnerets. The spots forming the cross on the forepart are sometimes so small that the character of the pattern is lost, and the succeeding transverse rows of spots are in such individuals very inconspicuous, but the spider is always easy to recognize, being so common that the eye is soon familiarized with all the transitions of colour and marking from the distinctly-marked triple-crossed specimen to that in which the medial line of spots is the only conspicuous marking on the leaf. The sides are pale towards the leaf-mark and dark below; and the under side is brown with pale mottling, a dark bundle in the middle, and a cream-coloured club-shaped mark on each side of this. The breastplate is blackish.

The legs are strong, hairy, spinous, and ringed, and there are several toothed claws (fig. 34, p. 225). In the males the haunches of the first and second pairs have a conical projection, and the shanks of the second pair are large and spinous.

The female is nearly  $\frac{1}{2}$  in. The male much less.

This species is known as the "garden spider." In France it is the "Porte-croix" or "croix de St. Denis."

The cocoon is formed in October, and is about  $\frac{3}{4}$  in. in diameter, of a roundish shape and yellow colour, and contains a flattened mass of eggs. When the eggs are newly hatched, which takes place in spring, a curious and beautiful sight may often be seen. The little spiders, almost as soon as they leave the egg, spin a small irregular mass of almost invisible lines, in the middle of which they cluster together, forming themselves into a little ball about the size of a cherry-stone. This hangs apparently in mid-air, and an observer approaching it to discover its nature, touches some one of

the slender lines by which it is suspended, or some twig near enough to communicate the motion to them. In an instant some six or eight hundred living atoms begin to disperse—the solid little ball seeming for a moment to be turning into smoke, so minute are the animals, so rapid their motions, and so invisible the means of their dispersion. After a few seconds, if the disturbance be not repeated, the little creatures begin to subside again into a cluster, but this is not at once restored to its former small size ; and, indeed, it is easy to understand that upwards of six thousand legs, however small, must require some time in the packing, not to mention six or eight hundred pairs of poison fangs which, perhaps, even at this early age, may exact due observance on behalf of their respective owners.

The process by which the net of the garden spider is constructed is well worth observing. The first step is to extend a horizontal cord between two neighbouring points. This is done with the aid of the wind, the spider exposing the spinnerets to a current of air whilst emitting the fluid silk. A thread is thus, as it were, drawn from the spider by the power of the wind, and, coming in contact with some neighbouring object, adheres by its own natural stickiness. This is the commencement of the framework, which is completed by lines placed according to circumstances, some by the spider dropping and swinging from point to point, attaching a thread wherever he touches, and others, as in the case of the first, by means of the wind. The framework completed, the spider goes to the middle of the upper horizontal line, touches it with the spinnerets, so attaching the beginning of a thread to it, and drops perpendicularly on to the line forming the lowest side of

the framework, where he fastens the second end of the thread (see fig. 38 A B). He then climbs up this till he reaches the middle (c) (which is to be the middle of the web), and here he fixes the beginning of another thread. He now ascends the perpendicular thread, drawing out

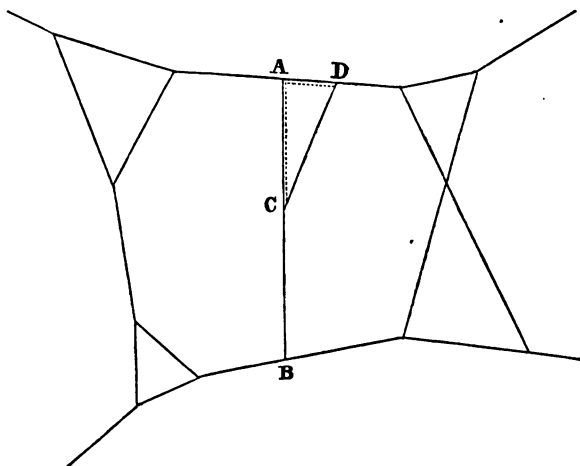


Fig. 38.

the new one as he goes, till he reaches the upper line (at A), along which he walks (see the dotted line) to the point at which he sees fit to attach this *radius* of his web (D). He now returns to the centre, and repeats the process, each time walking up the last-formed radius\* as he draws a new one, till the whole area of the web is filled with radiating lines.

The next process is to connect the radii by a spiral line, so forming the *meshes* of the net. The spider places himself in the centre of the web, and attaching a

\* Sometimes the spider forms the radii on opposite sides of the web alternately.

thread there, turns round, drawing a line from the spinnerets which he applies to ray after ray, fastening it with the help of his hind legs. He proceeds further and further from the centre until a spiral line has been described from thence to the circumference of the web, where he affixes another thread, and, reversing the operation, draws a second spiral line from the circumference to the centre.

It has already been observed that the foundation lines and the radii are strong, and when dry but slightly adhesive, threads, composed of many strands, whilst the spiral threads are slighter and are covered with globules of viscid matter. (See Fig. 33, p. 223.)

An interesting instance of ingenuity in a garden spider is given by Mr. Wood in his work entitled 'Homes without Hands.' A web exposed to a violent wind had had some of its lower supporting lines torn away. The spider, either unable to renew these during the storm, or knowing that it would be useless to do so, had suspended some large pieces of wood as weights to the web, which, whilst they preserved its form, did not present too great a resistance to the wind. Mr. Wood removed these weights, and observed that they were replaced,—a sufficient proof that their position was not accidental.

This spider has, like the *Pholcus* (see p. 162), a habit of quivering rapidly in its web. It has also, in common with some other species, a remarkable mode of disabling a victim, by twirling it, and at the same time winding threads around it, till it is entirely swathed in a strong silken covering. By this means large and strong insects are reduced to a meekness of demeanour which enables their host to keep them alive in the web, and so secure himself a supply of fresh provision.

\* 15. *Epēira angulata*. (Plate XIV. fig. 7 ♀.) The lateral eyes are oblique and near together. The abdomen is somewhat triangular, having two large tubercles or conical projections, one on each side of the forepart.

The shield is dark brown, darkest at the edges, and has three faint stripes down it. It is thickly covered with pale hairs. The abdomen is hairy on its upper side; has a dark patch with deeply-toothed darker edges, tapering to the spinnerets, surrounded by a fine-speckled cream-coloured line, and bearing some cream-coloured angular lines, streaks, and spots. The tubercles are yellowish-brown in front, with dark spots, as are the sides, on which the spots form oblique and horizontal streaks. Below, the abdomen is dark, with a pair of yellow spots near the tip. The breastplate is dark brown at the sides and yellow-brown down the middle. The maxillæ and lip are dark brown with yellow-brown tips.

The legs, in the female, are yellowish-brown, with dark rings. In the male they are long, with black thighs and flattened curved tibiæ. There are several claws.

The female is nearly  $\frac{1}{2}$  inch. The male less.

\* 16. *Epēira bicornis*. The hind pair of middle eyes are much the largest of all. The lateral eyes are the smallest, are placed obliquely and nearly touch each other. The lip is triangular. The abdomen is short and brown, and, as in the preceding species, has two conical projections on the forepart. These are largest in the female.

The shield is dark brown, covered with pale hairs, which are thickest in front. The abdomen has on the upper side a large reddish-brown patch, with waved dark edges, tapering to the spinnerets, and on which is a green spot, between the projections. The sides are



greenish and mottled. Below, the abdomen has a broad dark band, the gills are yellowish-brown. The breastplate and falces are dark brown. The lip and maxillæ are dark brown, with pale edges.

The legs are pale, with black rings. The claws many. The front pair of legs of the male have a point growing out of the haunch, and the tibiæ of the second pair are very spiny.

The female is about  $\frac{1}{4}$  inch. The male less.

The cocoon is formed in July. It is roundish and light brown in colour, and about  $\frac{1}{3}$  in. diameter.

\* 17. *Epēira calva*. The front pair of middle eyes are rather nearer together than the two hind, and are the smallest of all. The two hinder eyes are the largest of all. The lateral eyes are oblique and nearly touch each other. The tubercles and projection of the cephalothorax are black. The cephalothorax is high in front and slopes down behind.

The shield is very dark brown, with a yellowish-brown band down it, which is wide in front and narrower and paler behind. The abdomen is light yellowish-brown, with two pairs of very small dark spots, of which the front pair are the nearest together, two irregular brown stripes run down the upper part. The sides are dark brown, speckled with pale brown; the under side is blackish, with a cream-coloured line on each side which passes the spinnerets. The breastplate is blackish.

The legs are yellowish-brown, the thighs streaked, and, in the male, those of the first and second pairs are dark.

The female is  $\frac{1}{6}$  inch. The male less.

**\*\*** *The front pair of middle eyes on a projection of the cephalothorax.*

**\*\* 18. Epēira similis.** The four middle eyes form a square. The two first pairs of middle eyes are the largest of all. The lateral eyes are oblique and near together. The breastplate has small eminences. The abdomen is rather flattened above.

The description of the colour and markings of this species exactly corresponds with that (*E. callophylla*), with the exception of the following parts. In *E. similis* the dark margins of the shield are narrow. The falces are reddish-brown. The legs spotted with black.

*E. similis* is a less common species than *E. callophylla*.

The female is  $\frac{1}{4}$  inch. The male  $\frac{1}{2}$  inch in length.

**\*\* 19. Epēira callophylla.** (Plate XV. fig. 1 ♀.) The four middle eyes form a square. The front pair of middle eyes are on a small projection of the cephalothorax, and are the largest of all. The lateral eyes are oblique and together. The maxillæ are very broad at the tip. The abdomen is rather flattened above, and overhangs the cephalothorax much.

The cephalothorax is yellowish-brown, with black edges and a somewhat tapering blackish band down the middle. The abdomen has a large oval grey patch on the upper side, with waved black edges, and two lines of small sunk black spots down it, and two black spots on the forepart. It is silver-grey in front, and has silver-grey markings, and a wavy band of the same colour surrounds it. The sides are yellowish-brown, with five black spots; below is a broad black band, with a yellow stripe on each side. The gills are yellow. The breastplate is blackish, with a tapering yellowish-brown band down it.

The falces are reddish-brown, *convex and darkest in front*. The maxillæ and lip are reddish-brown, tipped with yellowish-brown, and the lip is darkest at the base.

The legs are hairy, have black spines, and are yellowish-brown *with black rings*.

The young of *E. callophylla* (not of *E. similis*) have the sides of a light burnt-sienna colour, and, when first excluded from the egg, the abdomen is dark and bears a yellow mark, forked in front.

The female is  $\frac{1}{3}$  inch. The male much less.

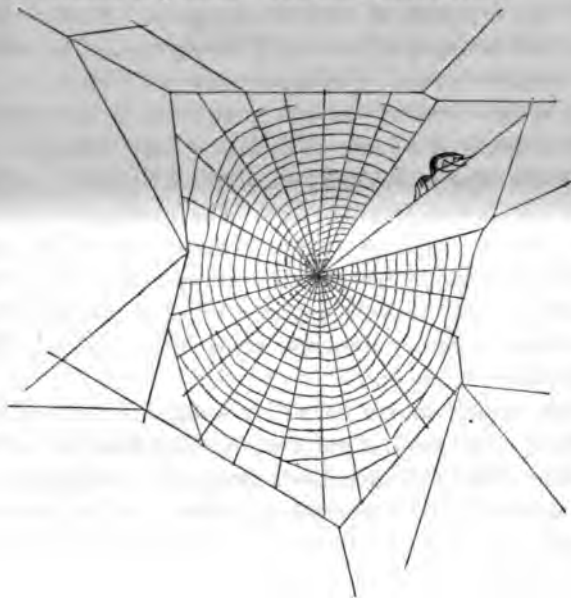


Fig. 89.—Web of *E. callophylla*.

This spider is extremely common, and may generally be recognized by the peculiarity of its web (described p. 225), which peculiarity, however, does not always

exist,—webs, formed by young individuals (probably of the same brood), being occasionally found within a short distance of each other, some with the characteristic *free radius*, others constructed after the usual *Epëira* type.

Near the web, and communicating with its centre by a thread (usually the free radius), is a small silken tubular hiding-place, in which it may easily be found at all seasons.

The cocoon is roundish, slight in texture, pale brown, and  $\frac{1}{2}$  inch in diameter, and is fastened to walls or under stones. The eggs are brown.

The eggs and young of this spider seem to be subject to the attacks of several enemies. Three parasites, namely, two *Ichneumons* and a species of *Acarus*, have been found on them, and two different species of spiders have been observed to prey on the eggs.

**\*\* 20. *Epëira acalypha*.** (Plate XV. fig. 2 ♀.) The eyes are on black spots. The front pair of middle eyes are on a small projection of the cephalothorax. The hind middle are the largest of all. The lateral eyes are in a very small tubercle and are near together. The breast-plate has prominences, is high, and greatly overhangs the cephalothorax. The cephalothorax is small.

The shield is glossy and of a palish brown, with a somewhat green tinge; it has a black line down it and black edges. The abdomen is, in the female, greenish-yellow, speckled with cream-colour. In the male it has a reddish tinge, especially on the sides. On the fore half are four black spots, disposed lozenge-wise, and behind are three longitudinal lines or blotches, formed or spots running into each other. On each side there are four black slanting lines. Below, the abdomen is black, with two lines running down it, and some cream-coloured

spots near the spinnerets. The gills are dark brown. The breastplate is black, as are the lip and maxillæ black with paler tips. The falcæ are yellowish-brown, with darker tips.

The legs are hairy, spinous, and of the same colour with the shield. They have some blackish spots, the ends of the joints are blackish, and, in the female, there is a blackish line above and below the thighs of the first two pairs. There are several claws.

The female is less than  $\frac{1}{4}$  inch.

\*\* 21. *Epeira bella*. (Plate XV. fig. 3 ♀ ; 3 a. ♂.) The eyes are on black spots. The four middle form a square. The front pair of middle are on a small projection of the cephalothorax, and are rather the smallest of all, and the hind middle are the largest. The lateral eyes are on a very small tubercle, and are very near together. The abdomen is overhanging and pointed in front. The cephalothorax is much sloped behind, and rather pointed before in the female.

The spider is covered with prick-like marks. The shield is brownish-red, with a dark indentation, from which two brown lines run to the sides of the head, and a brown band lies down each side. The abdomen has a few short pale hairs on it, and in front some short bristles. It is yellow above, with a close dark brown network, which is least conspicuous down the middle, and most so on the sides. There are three pairs of dark brown pits on the upper side, of which the two foremost form a square. Behind these are some waved dark lines. Below, the abdomen is dark brown, with yellow on each side. The breastplate, lip, and maxillæ are very dark brown, with a reddish tinge.

The legs are short, hairy, and spinous. In the female

they are yellowish, ringed with reddish-brown. In the male the thighs of the first two pairs are blackish, with yellowish-red extremities, and the haunch of the first pair has a small curved point growing on the under side.

The female is  $\frac{1}{2}$  inch. The male less.

**\*\*22. *Epeira ornata*.** The front pair of middle eyes are in a small projection of the cephalothorax, and are a little further apart than the hinder. The lateral eyes are oblique and in contact.

The shield is dull reddish-yellow. The abdomen is bright red. Two lines of very small yellow pits run down the upper side. The abdomen below and on the sides is paler than above. The breastplate is dull yellow mixed with red, and the gills are yellow.

The legs resemble the shield in colour. There are several claws.

The female is  $\frac{1}{4}$  inch long.

**\*\*23. *Epeira fusca*.** The front pair of middle eyes are on a slightly projecting part of the cephalothorax. The lateral eyes are oblique and nearly touch each other.

The spider is glossy. The shield is reddish-brown, with blackish edges and a blackish stripe down the middle, which forks slightly at the eyes. The abdomen is reddish or yellowish-brown, with a pair of large blackish spots on the forepart, between which is a strap of the same colour interrupted in the middle. The spots are succeeded by a series of short transverse curved blackish lines, which lessen in length towards the spinnerets. The sides are blackish with yellowish freckling, and have a yellow line running along them. Below, the abdomen is dark, with a yellowish band on each side, there are some yellow spots near the spinnerets, and the gills are light yellow. The breastplate is blackish.

The legs are long, and have many black spines. They are reddish-brown ringed with black, and have several claws.

The female is more than  $\frac{1}{2}$  inch long. The male is smaller.

The cocoon formed by this spider is very beautiful. It is large, white, and of a delicate and transparent texture, and is (like that of the *Theridion variegatum*) suspended by a stalk composed of several threads. The eggs contained in it are yellow, and form a little globe of about  $\frac{1}{4}$  inch in diameter, which may be seen through its transparent covering.



Fig. 40.  
Cocoon of *E. fusca*.

*Epēira fusca* is found in dark places, as in caves, under banks, in cellars, etc., and the male and female are usually to be found within a small distance of each other. It is one of the death-feigning spiders. The young when first hatched are dark, excepting on the forepart and sides of the abdomen, which have white markings, and there are two pale yellow spots below.

**\*\*24. *Epēira antriada*.** The front pair of middle eyes are on a small projection of the cephalothorax. The lateral eyes are oblique and nearly touch each other.

The shield is pale, with black edges, and bears a dark triangular patch with broken edges, reaching from behind the eyes to the base. On this are pairs of large oval pale spots. The abdomen has a somewhat leaf-shaped mass of small dark brown and white streaks and spots on the upper side. The sides have speckles and streaks of black-brown and pale colour, and below the abdomen is dark on the fore half, and pale near the spinnerets, with

a curved yellow line on each side, and two pairs of yellow spots at the spinneret. The gills are whitish. The breastplate is blackish.

The legs are hairy, pale reddish-brown, and have black spines and spots and blackish rings. There are several foot-claws.

The female is nearly  $\frac{1}{2}$  inch.

The spider is easily recognized by the markings on its shield. It is found in dark damp places in many places throughout Great Britain and Ireland. The net is large, and has an opening in the middle. It resembles *Tetragnatha extensa* and *Epëira inclinata* in its manner of stretching forward its two front pairs of legs.

**\*\*25. *Epëira celata*.** The front pair of middle eyes are on a small projection of the cephalothorax. The lateral eyes are oblique and nearly touch each other.

The shield is glossy and pale brown streaked across with black, and bearing down the middle a black stripe, which is widest on the forepart, where it has pale spots, the edges also are black. The abdomen is of black and brown, mixed. Down the middle runs a broad stripe of yellow, narrowest in front. A fine, darkish, branching line lies on this stripe, the forepart of which is crossed by a yellow line. On the forepart of the abdomen are two faint yellowish lines. Below, the abdomen is blackish, with a yellow line on each side. The gills are light brown. The breastplate and lip are blackish, the latter a little red at the tip. The falcæ are dark brown, with a tinge of red.

The legs are long and hairy, and have black spines. They are yellowish-brown spotted and ringed with black.

The female is nearly  $\frac{1}{2}$  inch in length. The male less.

This spider is found in damp places, as caves, etc.



The cocoon is roundish, white, of slight texture and about  $\frac{1}{2}$  inch across, and the eggs are yellow.

**\*\*26. *Epeira inclinata*.** (Plate XV. fig. 4 ♀.) The front pair of middle eyes are on a small projection of the cephalothorax. The lateral eyes are oblique and nearly touch each other.

The shield is pale. A faint curved dark line, sending out a sharp angular mark, runs from behind each pair of lateral eyes towards the middle, where it joins the two ends of a line which forms a loop near the base of the shield. The abdomen varies much both in hue and in the depth and distinctness of its markings, the ground colour being pale brown, brownish-cream colour, pinkish-brown, or brighter red and yellow, and the dark markings being sometimes very faint. A band, broad in front and narrower behind, but ending abruptly above the spinnerets, runs down the middle. This is composed of dark blotches nearly enclosing a roundish pale space in front, behind which is a triangular pale space (pointing forward) which is followed by some transverse pale bars. A fine dark line runs down the middle and sends out fine branches which ramify and form delicate reticulations upon the blotches. The sides are pale, mottled with whitish and, at the hinder part, also with blackish colour, and the under side is nearly black with a curved yellow line on each side, followed by two spots. The gills are yellowish-brown and the breastplate is nearly black.

The legs are pale in the female, darker in the male, and hairy, and have dark spines, spots, and, in the female, rings. There are several claws.

The female is more than  $\frac{1}{4}$  inch. The male smaller and more slender.

This spider derives its specific name from the inclined position in which its web is always found. The web is open in the centre and is placed among the branches of shrubs and trees.

The cocoons, which are several in number, are round, nearly white, and about  $\frac{3}{8}$  inch in diameter. The eggs are pale yellow.

When alarmed, the spider drops from the web, being, however, still connected with it by a thread formed as it falls, and by which it is enabled to reascend to its former position.

**\*\*27. *Epeira albimacula*.** The four middle eyes form a square, the hind pair being the largest of all. The eyes of each lateral pair are oblique, on a tubercle, and very close together.

The shield is glossy, and yellowish-brown, darkest in front and on the sides. The abdomen has a blackish patch on the upper side, wide in front and pointed behind, and with a toothed white edge. Crossing it in front is a small white mark with fine black specks on it. Below, the abdomen is blackish, with a curved cream-coloured mark on each side. The sides are whitish, with dark irregular markings. The gills are dark brown. The lip and breastplate resemble the shield in colour, the breastplate having dark edges. The falces and maxillæ are dark brown with a red line.

The legs are shorter in the female than in the male, and the thighs are white with a black ring. In the male they are long and thin, yellowish-brown, and the first two pairs have blackish colour on the upper side of their thighs, the other pairs of legs are faintly ringed.

The male is  $\frac{1}{8}$  inch. The female is larger.

**\*\*28. *Epeira anthracina*.** The female is not yet de-

scribed. The four middle eyes form a square. The lateral eyes are oblique and nearly touch each other. The breastplate is broad.

The spider is dark and glossy. The shield is very dark brown. The abdomen blackish. The breastplate is blackish. The falces are brownish-red, as are also the maxillæ and lip, excepting their bases, which are brown.

The legs are long, hairy, and slightly spinous, yellowish-red, except in front of the thighs of the first pair, where they are darker.

The male is  $\frac{1}{10}$  inch.

**\*\*29. *Epeira conica*.** (Plate XV. fig. 5 ♀. Eyes, Plate II. fig. 35.) The front pair of middle eyes are on a decided projection of the cephalothorax, and are rather a little further apart than the hinder. The lateral eyes are oblique, on a very small tubercle, and nearly touch each other. The falces are long. The abdomen is of an unusual form, having a high pointed hump near the middle, so that seen sideways it is nearly triangular. The cephalothorax is small in the female, larger in proportion in the male.

The shield is dark. The abdomen is whitish, with a dark band, bearing white marks, reaching from the base to the hump. Behind the hump it is brown, with uneven white markings. The sides are streaked, and the lower part is dark, with a large white mark on each side of the middle.

The legs are variegated in colour. The palpal claw is toothed.

The female is about  $\frac{1}{4}$  in. The male is much smaller.

This curious little spider is easily recognized by its abdomen, so apparently misshapen as to induce an ob-

server using the naked eye, to imagine it to be injured or crushed. It has been found in Yorkshire, Buckinghamshire, Cambridgeshire, Kent, and Middlesex. The web spun by *E. conica* is small, and the spaces between the spiral threads are very narrow, and the spider is said to have a habit of hanging to his snare the remains of the insects on which he has fed. Lister accuses the poor little hunchback of ostentation in making this display.

Mr. Rennie gives an account of one of these spiders, on board a steamer on the Maine, whose web had become clogged with soot from the engine chimney. He observed the spider clear some of the threads, break off others, roll them up and throw them away, replacing them afterwards with fresh threads. The web is made in a rolled-up leaf.

**\*\* 30. *Epeira tubulosa*.** The front pair of mid-eyes are wider apart than the hind, and are the largest of the eight. The lateral eyes are oblique, and do not touch each other. The spider is glossy. The shield is dark brown, in the female. The abdomen is dark brown above, darkest in front and behind, with three cream-coloured lines down it, the middle one of which sends out lateral cream-coloured markings. The sides are cream-coloured, with slanting brown marks. The male is darker and not so clearly marked as the female. Below the abdomen is blackish, with a cream-coloured line on each side. The breastplate is dark brown, as are the falces, maxillæ, and lip, of which the tips are reddish.

The legs are thick, hairy, and slightly spinous. They are yellowish-brown, with faint darker rings.

The female is  $\frac{1}{4}$  in. The male less.

This spider conceals itself in a silken tube formed

near its snare, and which it covers and conceals with the leaves of the plant upon which the web is placed, or sometimes in a folded leaf. The web is placed perpendicularly, and is loose and irregular in its structure. The cocoon or cocoons are formed in June. They are of a flattened shape, white colour, and contain pale yellow eggs.

**\*\* 31. *Epēira Herii*.** The eyes are on black spots. The four middle eyes form a square. The front pair of middle eyes is on a tubercle. The hind eyes are the largest of all. The lateral eyes are near together. The abdomen is slender.

The spider is glossy. The shield is of a red-brown colour. The abdomen is blackish, and has a yellowish or cream-coloured stripe down the middle, and one on each side. Below, the abdomen is dark brown, with a pale yellow line on each side. The breastplate is blackish, the lip and maxillæ dark reddish-brown. The falces are much paler.

The legs are pale reddish-brown and hairy, and have fine spines.

The dark parts of the young are redder in colour than those of the grown spider.

The female is rather more than  $\frac{1}{8}$  inch.

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## Genus II. TETRAGNATHA.

*Eyes.* In three groups; four are arranged nearly in a square, the front pair being the nearest together, with two on each side, the foremost of which are the smallest of all. The eyes are on black spots. (Plate II. fig. 36.)

*Falces.* Remarkably large and spreading widely, with two rows of teeth and a very long fang. (Fig. 40.)

*Maxillæ.* Long, wider at the tip than at the base.

*Lip.* Short, semicircular, projecting.

*Legs.* Long, thin, hairy, and spinous.

*Claws of feet.* Three. The two upper toothed.

*Palpal claw of female* toothed.

*Cephalothorax.* Contracted towards the face, cut straight in front.

*Breastplate.* Long heart-shape, with prominences.

*Abdomen.* Very long; somewhat cylindrical; larger in front than behind.

*The female is less than  $\frac{1}{2}$  inch. The male smaller.*

*Tetragnatha extensa.* (Plate XV. fig. 6 ♀; eyes, Plate II. fig. 36.) The colours of this spider vary. The cephalothorax is pale, and, when young, is marked with black. The abdomen is striped lengthwise, with black and shades of green, a fine branching black line running down the middle. The sides are pale and finely reticulated, the under part has a dark band down the middle, with green on each side. The breastplate is dark brown, with a pale reddish-brown line down it.

The legs are pale. In the young they have black rings. The two front pairs are very long, the first being  $\frac{3}{4}$  inch in the female and 1



Fig. 40.  
Jaws and falces of *T. extensa*.

inch in the male, and the third pair is extremely short in proportion.

It is impossible to mistake this for any other spider, its form being quite peculiar to itself. When at rest, the spider extends the two first pairs of legs forward, and the last pair backwards,\* in a straight line (from which habit the specific name is derived), and by this is rendered so inconspicuous as to be likely to escape notice. The net is placed in vertical, horizontal, or inclined position. It is of slight texture, and the revolutions of the spiral thread become closer towards the centre, which is open. It is found chiefly in the neighbourhood of water, but may be met with elsewhere.

The cocoon is formed in June. It is roundish, less than  $\frac{1}{4}$  inch in diameter, fine and slightly woven, and is either whitish with greenish tufts, or greenish with whitish tufts upon its surface. The cocoon is fixed to some object near the web, and contains pale-yellow eggs.

The *Tetragnatha* is quick in its movements, and is said to be keenly alive to approaching changes of weather, changing the site of its web when placed near the surface of water, if gloomy and threatening weather make a dangerous rise of the water probable.

\* In this the *Tetragnatha* is resembled by *E. inclinata* and *E. antiada*.

## Tribe II. SENOCULINA.

### FAMILY I. DYSDERIDÆ.

#### Genus I. DYSDERA.

*Eyes.* Six grouped; in a small oval, more or less open in front; the two foremost being the largest. (Plate II. fig. 37 *a*, fig. 37 *b*.)

*Falces.* Conical and projecting forwards.

*Maxillæ.* Long, straight, pointed at the tip, and enlarged at the insertion of the palpi (see Fig. 41, p. 260, *D. erythrina*).

*Lip.* Long and oval.

*Legs.* Moderately long; the third pair shortest.

*Claws of feet.* Two or three.

*Cephalothorax.* Oval.

*Breastplate.* Oval.

*Abdomen.* Egg-shaped, rounded above and slightly overhanging the cephalothorax \*, or slender \*\*.

*The females are from about  $\frac{1}{2}$  to  $\frac{1}{4}$  inch.*

The spiders of the family *Dysderidæ* live by hunting, issuing upon their prey from hiding-places formed under stones, in cracks and crannies of walls, and in similar places. These hiding-places are tubes or cells of silk, somewhat similar to those of the *Drassidæ*, to which family the *Dysderidæ* bear a resemblance in several other points.



These spiders have six spinnerets, and four breathing-holes. The front pair of breathing-holes communicates with the gills (see p. 16). The hinder pair belongs to the tracheæ or air-tubes. These are numerous and complicated; the smaller branches, which spread throughout the body, and reach to the extremities, run from two main vessels which communicate with these openings.

\* *Cephalothorax* egg-shaped.

\* 1. *Dysdera erythrina*. (Plate XVI. fig. 1 ♀; eyes, Plate II. fig. 37 b.) The falces and the maxillæ are

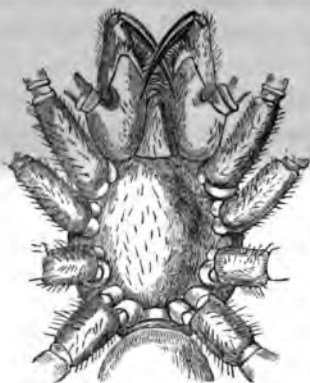


Fig. 41.  
Under side of cephalothorax of  
*D. erythrina*.

hairy on the inner side. The lip is notched at the tip. The breastplate has eminences. The spider is thinly covered with dark hairs. The cephalothorax is large and glossy, and, with its appendages, is dark red. The abdomen is cream-coloured.

The legs are red, order of length 1 4 2 3. There are two foot-claws and a pad.

The female is about  $\frac{1}{2}$  inch.  
The male less.

This elegant spider is, like the rest of its genus, of nocturnal habits. Its retreat is a long, closely woven silken tube, open at one end, and fastened either horizontally to the under side of a stone, or vertically to a wall. In this the animal remains motionless during the day, with its head towards the mouth of its cell. In the evening it commences a vigorous assault upon all prey within its reach, including the spoils of other spiders, or

when possible, other spiders themselves. It is so fond of feeding upon ants, that it has been known to make its silken nest actually within an ant-hill, remaining thus surrounded by its prey whilst protected from assault by the close texture and strong material of its little fortress.

\* 2. *Dysdera rubicunda*. (Plate XVI. fig. 2 ♂.) The eyes are close to the front edge of the shield. The falces are long and, with the maxillæ which are much enlarged at the insertion of the palpi, are hairy on the inner side. The lip is notched at the tip and grooved across at the base. The spider is thinly covered with short hairs. The cephalothorax and its appendages are dark red. The abdomen is cream-coloured.

The legs are yellowish-red. Order of length 1 2 4 3. There are two foot-claws and a pad.

The male is about  $\frac{1}{4}$  inch long.

\*\* *Cephalothorax slender*.

\*\* 3. *Dysdera Hombergii*. (Plate XVI. fig. 3 ♀; eyes, Plate II. fig. 37 a.) The falces are strong, and have a few teeth. The lip is cut straight across at the tip. The breastplate has eminences.

The shield is glossy and blackish. The abdomen is long and slender, especially in the male. It is dark or mottled-brown above, and yellowish-brown below, or sometimes pinkish, with a dark stripe down the middle. The four breathing-holes are pale yellow. The breastplate is very dark.

The legs are yellowish-brown with dark rings. The order of length is 1 4 2 3. There are three claws, the two upper toothed, the third very small.

The female is about  $\frac{1}{4}$  inch.

This spider is common in the north of England and

Wales. The cell is oval, white, and slightly woven, and is covered with particles of gravel or other extraneous matter.

In the month of June the female retires to this cell, and there deposits about twenty or thirty pinkish eggs.

## Genus II. SEGESTRIA.

*Eyes.* Six, in three groups, one pair in the middle and a pair on either side, each lateral eye being placed on a tubercle. (Plate II. fig. 38, *S. perfida*.)

*Falces.* Strong and prominent, glossy and clothed on the forepart with long hairs; with one row of teeth.

*Maxillæ.* Long, straight, rounded at the tip on the outer side; enlarged at the insertion of the palpi (see Fig. 42).

*Lip.* Oblong, slightly notched at the tip.

*Legs.* Rather long and strong. Order of length, in the female, 1 2 4 3. In the male 1 2 3 4.

*Claws of feet.* Three. The two upper toothed, the lower curved and plain.

*Cephalothorax.* Convex.

*Breastplate.* A long oval, with prominences.

*Abdomen.* Somewhat cylindrical, a little overhanging the cephalothorax.

*The females are from  $\frac{3}{4}$  inch to less than  $\frac{1}{2}$ .*

The spiders of this genus resemble in general appearance those of the genus *Drassus*. The cephalothorax is of nearly equal breadth

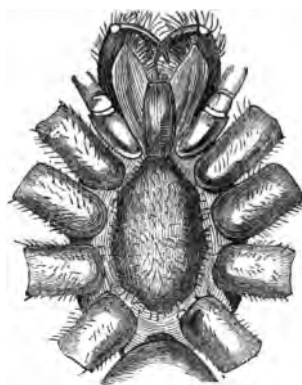


Fig. 42.  
Under side of cephalothorax of  
*S. perfida*.

throughout; the legs are moderately thick and not long;

the body is downy, and the long and narrow jaws are similar to the jaws of *Drassus*. The number and position of the eyes, however, forms a character which renders it impossible to confuse these genera.

1. *Segestria perfida*. (Plate XVI. fig. 4 ♀; eyes, Plate II. fig. 38.) The maxillæ have projections at the base. The abdomen is a little larger behind than before. The cephalothorax is large and furrowed, with a very inconspicuous indentation in the middle.

The shield is reddish-brown, with greyish hairs. It is darkest at the edges and near the eyes. The abdomen is dark brown, with a faint dingy toothed band running down it in the male. In the female this is more distinct. Below, it is reddish-brown, lighter in the male than in the female, with a fine cream-coloured line on each side, and there is a similar line placed slantingly on each side, which joins that at the spinnerets. The front pair of breathing-holes are yellow, those behind them are yellowish-brown. The breastplate, maxillæ, and lip are reddish-brown, the two latter darkest at the base. The falcæ are bright green.

The legs are hairy, spinous and dark.

The female is  $\frac{3}{4}$  inch.

This spider is rare.

2. *Segestria senoculata*. (Plate XVI. fig. 5 ♂.) The abdomen is of nearly equal thickness throughout. The cephalothorax is long, and has no indentation.

The spider is glossy. The shield is dark brown; the abdomen is dull yellowish-brown, with a dingy pattern down it of lozenge-shaped markings. Below, it is speckled. The breastplate is pale brown. The maxillæ and lip are dark, with reddish-brown tips. The falcæ are blackish. The breathing-holes are all of a cream-colour.

The legs are hairy spinous, and yellowish-brown, ringed with blackish colour.

The female is  $\frac{3}{4}$  inch in length. The male less.

The cocoon is formed in May or June. It is of white silk, with earth, etc., attached to it, of a flattened shape and about  $\frac{1}{4}$  inch in diameter. The eggs are yellowish-white.

---

### Genus III. SCHŒNOBATES.

*Eyes.* Six. Four form a crescent with the horns pointing forwards, and behind each lateral eye is another.

*Falces.* Without teeth.

*Mazillæ.* Strong, short, broad, hairy especially at the tip; projections at the base, leaning towards the lip.

*Lip.* Large, triangular.

*Legs.* Of moderate length and strength. Order of length  $\frac{1}{4}$  2 3.

*Claws of feet.* Two, not toothed.

*Cephalothorax.* Oval.

*Breastplate.* Heart-shaped.

*Abdomen.* Egg-shaped, overhanging the cephalothorax,

*Length of male*  $\frac{1}{2}$  in.

Only one individual of this genus is recorded, and, therefore, as it is not uncommon to find individuals of eight-eyed spiders which possess only six (or sometimes even fewer), the discovery of other specimens may at some future time occasion the removal of this genus to the tribe *Octonoculina*.

**Schœnobates Walkeri.** The shield is reddish-brown, darkest at the edges, and clothed with conspicuous white hairs placed in convergent rows. The abdomen is dark

brown and yellowish-brown mixed. It is clothed with hairs similar to those on the shield, and a cluster of white hairs is above the spinnerets. The breastplate resembles the shield in colour.

The legs are yellowish-brown, with dark thighs in the two first pairs.

The male is  $\frac{1}{2}$  in. long.

#### Genus IV. OONOPS.

*Eyes.* In three pairs, placed close together. Those of the central pair are oval, and those of the lateral are placed one behind the other. (Plate II. fig. 39.)

*Falces.* Slight.

*Marillæ.* Enlarged at the insertion of the palpi and at the tip.

*Lip.* Short, triangular.

*Legs.* Long. Order of length 4 1 2 3.

*Claws of feet.* Two, toothed, and provided with a hair pad.

*Cephalothorax.* Oval, very high in front and sloping to the base, small at the face.

*Breastplate.* Broad, heart-shaped, with projections.

*Abdomen.* Egg-shaped, overhanging the cephalothorax.

*Length of female*  $\frac{1}{3}$  inch.

*Oonops pulcher.* (Plate XVI. fig. 6 ♀ ; eyes, Plate

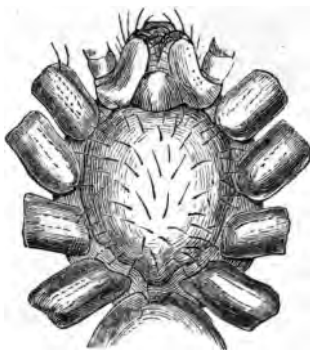


Fig. 43.  
Underside of cephalothorax of  
*O. pulcher.*

II. fig. 39.) The shield and all its appendages are yellowish-brown. On the face are some hairs pointing forwards. The abdomen is bright yellow-red. The breathing-holes are cream-coloured.

The young sometimes are of a pale colour, and have faint brownish bands above and below the abdomen, with slanting streaks on the sides.

This spider lives in the cracks of rocks, walls, and upon tree-stems. The cocoons are several. They are formed in May, are roundish, white, and small, and each commonly contains two pink eggs.

This species is not rare.

## FAMILY II. SCYTODIDÆ.

## Genus I. SCYTODES.

*Eyes.* In three isolated pairs. The middle pair is in front, the lateral pairs are further back and placed obliquely. (Plate II. fig. 40.)

*Falces.* Prominent, small, and having one fang.

*Maxillæ.* Narrow and sharp, enlarged at the insertion of the palpi, and leaning towards each other.

*Lip.* Short, somewhat triangular, round at the tip.

*Legs.* Thin and remarkably long, order of length 1 4 2 3, having an additional joint at the feet.

*Claws of feet.* Two, toothed.

*Cephalothorax.* Large, oval, very high behind, not indented.

*Breastplate.* Oval, with prominences.

*Abdomen.* A round eggshape.

*The female is  $\frac{1}{4}$  in.*

*Scytodes thoracica.* The male is not yet described. (Plate XVI. fig. 7 ♀ eyes, Plate II. fig. 40.) The front pair of eyes is on a black spot. The shield is brownish-yellow, with irregular black markings. The abdomen is of a pale yellowish colour, with two rows of black spots down it, and with other and smaller spots distributed over it. Below, the spots are small and few



Fig. 44.  
Underside and cephalothorax of  
*S. thoracica.*



in number. The breathing holes are yellow. The breastplate is yellowish, with black spots on the edges, and one in the middle. The maxillæ are of the same colour, with a black spot near the insertion of the palpi, and there is a black spot in front of the falces.

The legs are brownish-yellow ringed with black.

The female is  $\frac{1}{4}$  inch.

This spider carries her cocoon under her breastplate, in which position it is not secured by silken threads, but is held by the falces and palpi.

The *Scytodes* has been found in houses, and abroad, in warm situations, upon walls, etc., only quitting its retreat at the hottest and dryest time of day. It is slow and considerate in its motions, using somewhat of the action of a gnat, in lifting and poising its legs in the air in walking. The whole character of the animal is mild and quiet. The poison-fangs are so feeble as to be of but little use in seizing its prey, which office is chiefly performed by the maxillæ. When taken, the spider offers no resistance, and attempts no flight, but feigning death, resigns itself quietly to its fate.

The male has not yet been found.

# TABULAR ARRANGEMENT OF NESTS, COCOONS, AND EGGS.

THE following list contains the cocoons, etc., of less than one-third of the known British species of spiders. It is, however, hoped that the list may be extended in a future edition, and that the present list, with all its imperfections, may be of some service, and may at least serve as a suggestion to the young arachnologist, who may be able from his own observation to add to the number of species contained in it.

(The sign ♀ denotes that the female is usually found with her cocoon.)

## I. EGGS ENCLOSED IN A SINGLE COCOON CARRIED BY THE MOTHER.

### A. COCOON ATTACHED TO THE SPINNERETS.

\* *Cocoon zoned (all the Lycosæ).*

*Cocoon white, round.*

<i>Lycosa agretica</i> .....	$\frac{1}{4}$ in.,	eggs pale yellow.
<i>Lycosa campestris</i> .....	$\frac{1}{4}$ in.,	„ pale yellow.
<i>Lycosa Cambrica</i> .....	$\frac{1}{8}$ in.,	„ yellow.
<i>Lycosa latitans</i> .....	$\frac{1}{8}$ in.,	„ yellow.
<i>Lycosa piratica</i> .....	$\frac{1}{8}$ in.,	„ deep yellow.

*Cocoon pale brown, round.*

<i>Lycosa rapax</i> .....	$\frac{1}{4}$ in.,	eggs pale yellow.
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*Cocoon pale brown or greenish, lenticular, zone paler.*

<i>Lycosa saccata</i> .....	$\frac{1}{8}$ in.,	eggs pale yellow.
<i>Lycosa fluviatilis</i> .....	$\frac{1}{8}$ in.,	,, pale yellow.
<i>Lycosa lugubris</i> .....	$\frac{1}{8}$ in.,	,, pale yellow.
<i>Lycosa obscura</i> .....	$\frac{1}{8}$ in.,	,, yellow.
<i>Lycosa exigua</i> .....	$\frac{1}{7}$ in.,	,, yellowish-white.

*\*\* Cocoon not zoned.*

*Cocoon white, round.*

<i>Theridion carolinum</i> .....	$\frac{1}{10}$ in.,	eggs yellow-white.
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*Cocoon yellow-brown, round.*

<i>Linyphia crypticolens</i> .....	$\frac{1}{6}$ in.,	eggs brown.
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#### B. COCOON CARRIED UNDER THE BREASTPLATE.

*Cocoon dull yellow, round.*

<i>Dolomedes mirabilis</i> .....	$\frac{1}{8}$ in.,	eggs dull yellow.
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*Cocoon brown, round.*

<i>Dolomedes fimbriatus</i> .....	$\frac{3}{8}$ in.	
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*Pholcus phalangioides.*

*Cocoon ?*

*Scytodes thoracica.*

## II. EGGS ENCLOSED IN ONE OR MORE COCOONS, NOT IN A CELL OR NEST.

*Cocoon single, stalked, pendent.*

<i>Agelena brunnea</i> , coc. white*	$\frac{1}{4}$ in.,	eggs yell.-white.
<i>Theridion varians</i> , coc. reddish-brown	$\frac{1}{8}$ in.,	eggs brown.
<i>Epeira fusca</i> , coc. white,	$\frac{1}{2}$ in.,	eggs yellow.

*Cocoons several, stalked, pendent, reddish-brown.*

<i>Theridion tepidariorum</i> .....	$\frac{1}{8}$ to $\frac{1}{2}$ in.,	eggs yell.-white.
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*Cocoon single, pear-shaped, with projections, white.*

<i>Theridion pallens</i> .....	$\frac{1}{10}$ in.,	eggs pale yellow.
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\* Of white silk, but entirely covered with caked earth.

*Cocoons 1 or 2, lenticular, white.*

Hecærge spinimana,* 1	... $\frac{1}{8}$ in.,	eggs yellowish-white.
Thomisus cristatus,* 1	..... $\frac{1}{8}$ in.,	„ pale yellow.
Thomisus erraticus,† 1	..... $\frac{1}{8}$ in.,	„ pale yellow.
Philodromus variatus, 1	... $\frac{1}{8}$ in.,	„ pale yellow.
Drassus lucifugus, 1 or 2	... $\frac{3}{8}$ in.,	„ yellow.
Linyphia marginata, 1 or 2.	$\frac{1}{8}$ in.,	„ pale yellow.
Epeïra tubulosa, 1 or 2	.....	„ pale yellow.

*Cocoon single, plano-convex, white.*

Agelena elegans	..... $\frac{1}{8}$ in.,	eggs yellow.
Linyphia montana.		

*Cocoon single, round or roundish, whitish or cream.*

Theridion quadripunctatum	$\frac{1}{8}$ in.,	eggs pinkish.
Neriène longipalpis	..... $\frac{1}{10}$ in.,	„ yellowish-white.
Epeïra celata	..... $\frac{1}{2}$ in.,	„ yellow.
Epeïra umbratica	..... $\frac{3}{8}$ in.,	„ yellowish-brown.

*Cocoons several, round or roundish, white.*

Linyphia minuta	..... $\frac{1}{8}$ in.,	eggs yellowish-white.
Neriène livida	..... $\frac{1}{7}$ in.,	„ yellowish-white.
Epeïra inclinata	..... $\frac{3}{8}$ in.,	„ pale yellow.
Oonops pulcher	..... $\frac{1}{8}$ in.,	„ 2. pink.

*Cocoon single, roundish, yellow.*

Epeïra diadema*	..... $\frac{2}{3}$ in.,	eggs yellow.
Epeïra quadrata	..... $\frac{3}{4}$ in.,	„ yellow.
Epeïra cucurbitina	..... $\frac{3}{4}$ in.,	„ yellow.

*Cocoon single, roundish, green and white, tufted.*

Tetragnatha extensa	..... $\frac{1}{8}$ in.,	eggs pale yellow.
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*Cocoon single, roundish, greenish-brown.*

Theridion denticulatum	... $\frac{1}{8}$ in.,	„ brown.
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*Cocoon single, roundish, yellowish-brown.*

Epeïra solers	..... $\frac{1}{8}$ in.,	eggs dark brown.
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\* Usually attached to the underside of stones.

† Usually attached to the underside of a dead leaf.

*Cocoon single, roundish, pale brown.*

*Epeira bicornis* .....  $\frac{1}{3}$  in.

*Cocoons several, round, cream.*

*Neriene rufipes* .....  $\frac{1}{6}$  in., eggs yellowish-white.

### III. EGGS ENCLOSED IN ONE OR MORE COCOONS PLACED IN A CELL, NEST, ROLLED LEAF, OR SAC.

#### A. CELL FORMED WITHIN OR UNDER A LEAF OR LEAVES ROLLED AND FASTENED WITH THREADS.

\* *Cocoon below a leaf curved backwards.*

*Cocoon single, round, white.*

*Theridion pulchellum*\* .....  $\frac{1}{8}$  in., eggs yellowish-white.

*Cocoon single, round, greenish or bluish-green.*

*Theridion lineatum* .....  $\frac{1}{4}$  in., eggs yellowish-white.

*Theridion nervosum* (sometimes. See F.)

*Cocoon single, lenticular, white.*

*Thomisus bifasciatus* .....  $\frac{2}{5}$  in., eggs yellowish-white.

*Clubiona holosericea* ♀ ...  $\frac{1}{4}$  in., „ yellowish-white.

*Clubiona amarantha* .....  $\frac{1}{3}$  in., „ yellowish-white.

*Clubiona accentuata* ♀ ...  $\frac{1}{2}$  in., „ yellowish-white.

\*\* *Cocoon between two leaves, bound together.*

*Cocoon single, lenticular, white.*

*Thomisus luctuosus* ♀ .....  $\frac{1}{4}$  in., eggs yellowish-white.

\*\*\* *Cocoon in a cell amidst several leaves bound together.*

*Cocoons 2, lenticular, white.*

*Philodromus cespiticolis* ♀ ...  $\frac{1}{4}$  in., eggs pale yellow.

*Cocoon single, round, green.*

*Sparassus smaragdulus.*

\*\*\*\* *Cocoon in a folded dead leaf.*

*Cocoon single, lenticular, white.*

*Philodromus dispar* .....  $\frac{1}{4}$  in., eggs yellowish-white.

\* Merely suspended under and sheltered by a leaf.

B. NEST FORMED BY THE BINDING TOGETHER OF TWIGS OR OF SEVERAL LEAVES.

*Cocoon single, roundish, white.*

*Clubiona erratica* ♀ .....  $\frac{1}{4}$  in., eggs deep yellow.

*Cocoons 2 or 3, lenticular, white.*

*Ergatis benigna* .....  $\frac{1}{7}$  in., eggs pale yellow.

*Cocoons several, lenticular, greenish-white.*

*Ergatis latens* .....  $\frac{1}{8}$  in., eggs yellow.

C. CELL CONCEALED IN THE CREVICES OF WALLS, BARK OF TREES, ETC.

*Cocoons 1 or 2, lenticular, white.*

*Salticus scenicus* 1 or 2 ♀ .  $\frac{1}{8}$  in., eggs pale yellow.

*Salticus distinctus* 1.....  $\frac{1}{8}$  in., ,, pale yellow.

*Cocoon single, plano-convex, white.*

*Ciniflo atrox*, cell soiled ...  $\frac{1}{4}$  in., eggs pale yellow.

D. CELL IN A HOLE IN THE EARTH, UNDER STONES.

*Cocoon single, lenticular, white.*

*Drassus sylvestris* ♀ .....  $\frac{1}{8}$  in., eggs whitish.

*Drassus cupreus* ♀ .....  $\frac{2}{8}$  in., ,, pale yellow.

E. CELL ATTACHED TO THE UNDERSIDE OF (a) STONES, (b) LEAVES, OR (c) EXFOLIATED BARK; SOMETIMES\* BEARING DEAD LEAVES, ETC.

*Cocoon single, plano-convex, white or reddish.*

*Drassus ater* (a) ♀ .....  $\frac{2}{8}$  in., eggs white.

*Cocoon single, plano-convex, white.*

*Clubiona epimelas* ♀ .....  $\frac{1}{8}$  in., eggs pale yellow.

*Cocoon single, roundish, white.*

*Drassus lapidicolens* (a) ♀ \*

*Cocoon single, lenticular, white.*

*Clubiona holosericea* (bc) ♀  $\frac{1}{4}$  in., eggs white.

*Clubiona corticalis* (bc) ...  $\frac{1}{8}$  in., ,, pale yellow.

F. NEST DOMESHAPED, OF SILK, SOMETIMES (\*) THICKENED WITH  
DRIED LEAVES, MOSS, ETC.

*Cocoon single, lenticular, white.*

Argyroneta. (See I.)

*Cocoons 1 or more, lenticular, reddish-brown.*

Theridion sisymphum\*

*Cocoon single, round, greenish.*

Theridion nervosum\* .....  $\frac{1}{8}$  in., eggs yellowish-white.

*Cocoons several, round or roundish, white.*

Theridion varians.....  $\frac{1}{7}$  in., eggs yellowish-white.

*Cocoons several, round or roundish, yellow.*

Epeira apoclis.....  $\frac{1}{2}$  in., eggs pale brown.

G. CELL LONG, TUBULAR.

*Cocoons several, round, yellow-white.*

Theridion riparium .....  $\frac{1}{8}$  in., eggs yellowish-white.

H. CELL SUBTERRANEAN.

*Cocoon single, white ; Cell long, tubular.*

Atypus Sälzeri .....  $\frac{1}{2}$  in.

*Cocoon single, white, lenticular.*

Drassus sylvestris. (See D.)

Drassus cupreus. (See D.)

I. CELL SUBAQUEOUS, DOMESHAPED.

*Cocoon single, lenticular, white.*

Argyroneta aquatica, eggs yellow.

K. CELL OR SAC ONE OR MORE, SOILED.

*Cocoons 1 or 2, lenticular, white, in one soiled sac.*

Agelena labyrinthica .....  $\frac{1}{2}$  in., eggs pale yellow.

*Cocoons several, lenticular, white, each in a sac.*

Tegenaria domestica.....  $\frac{5}{8}$  in., eggs yellowish-white.

Tegenaria civilis .....  $\frac{1}{3}$  in., „ yellowish-white.

*Cocoons single, lenticular, white, soiled.*

*Cœlotes saxatilis.* (See L.)

*Textrix lycosina.* (See L.)

L. SAC IMPERFECT, CONSISTING MERELY OF A FLAT COVERING BINDING  
DOWN THE COCOON.

*Cocoon single, roundish, pale brown, covering slight.*

*Epëira callophylla* .....  $\frac{1}{2}$  in., eggs brown.

*Cocoon single, lenticular, white.*

*Philodromus aureolus*, eggs yellow.

*Cœlotes saxatilis*,  $\frac{1}{2}$  in., eggs yell.-white. Coc. soiled.

*Textrix lycosina*,  $\frac{1}{4}$  in., eggs pale yellow. Coc. soiled.

*Epeïra callophylla*, eggs brown.

*Cocoons several, convex, white.*

*Linyphia longidens* .....  $\frac{1}{4}$  in., eggs pale yellow.

IV. EGGS SLIGHTLY BOUND TOGETHER WITHIN A SAC OR  
CELL, NOT ENCLOSED IN A COCOON.

*Cell white, 2, soiled.*

*Salticus cupreus*,\* eggs pale yellow.

*Cell oval.*

*Salticus frontalis*, eggs pale yellow.

*Cell oval, soiled* (eggs not bound together).

*Dysdera Hombergii*, eggs pink.

---

\* Attached to the under side of a stone or dead leaf.



## EXPLANATION OF TERMS USED.

For the parts of the body, reference is made to Chap. II., where they are described.

*Abdomen.* See p. 11.

*Base.* That part of any organ at which it is attached to the rest of the body; *e.g.* base of the cephalothorax, the part next to the abdomen; base of the abdomen, the part next to the cephalothorax.

*Breastplate* or *Sternum.* See p. 13.

*Calamistrum.* See p. 14.

*Cephalothorax.* See p. 11.

*Falces.* See p. 12.

*Gibbous.* Humped.

*Lenticular.* Lens-shaped, resembling two watch-glasses placed edge to edge.

*Maxillæ.* See p. 13.

*Scopula.* See p. 14.

*Shield.* The covering of the upper side of the cephalothorax.

*Sternum* or *Breastplate.* See p. 13.

*Reticulated.* Marked as with network.

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THE END.





PLATE 1.

Figures illustrating the number and position of  
the eyes in different genera.

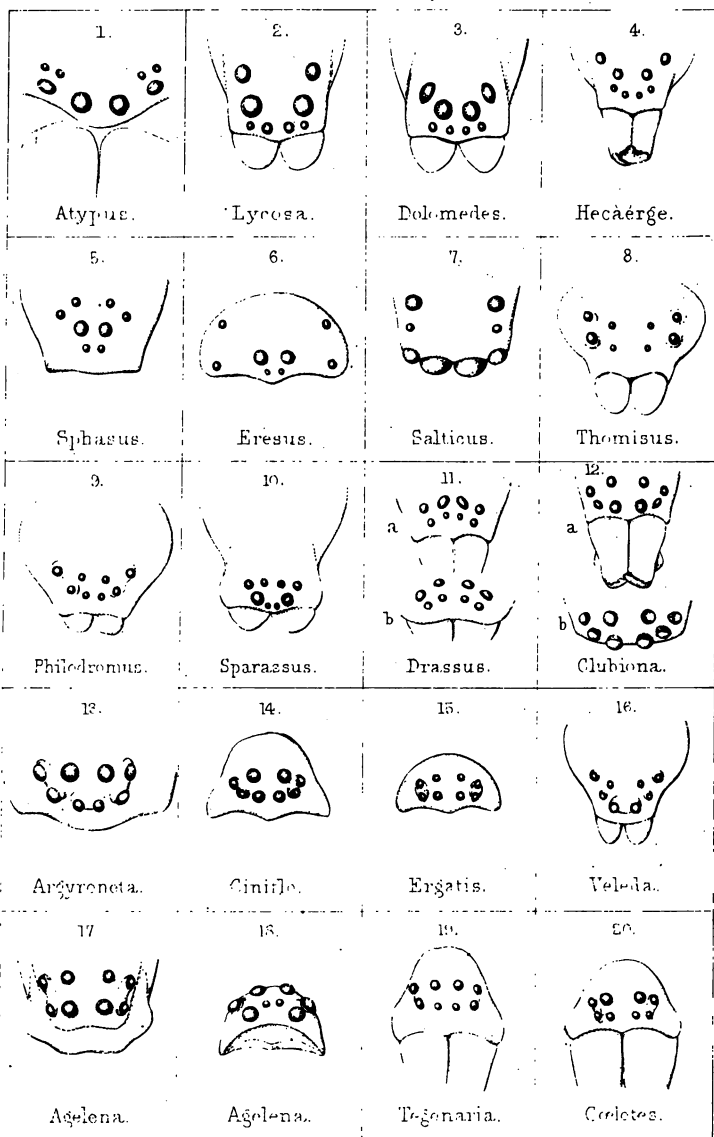






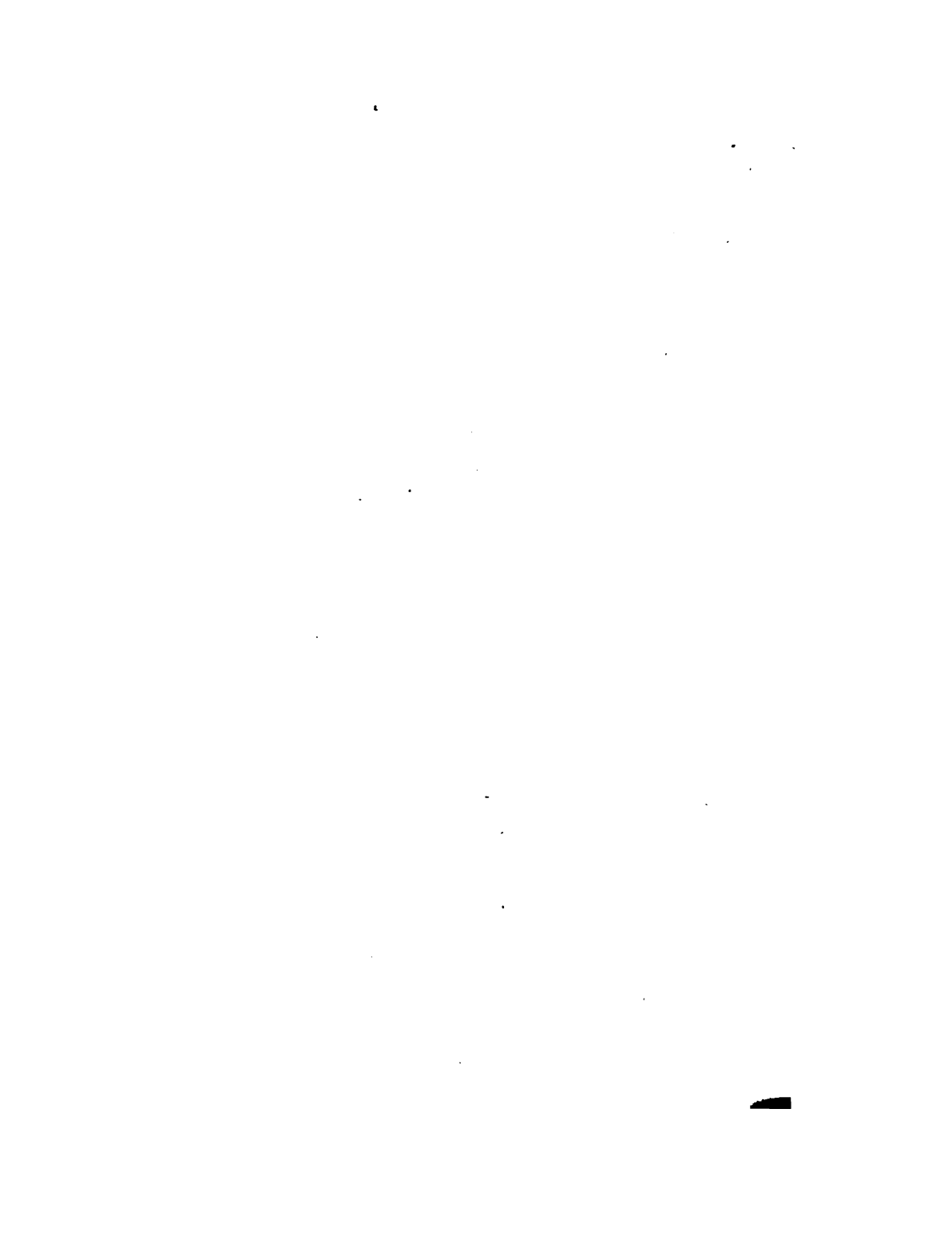


PLATE II.

Figures illustrating the number and position of  
the eyes in different genera.







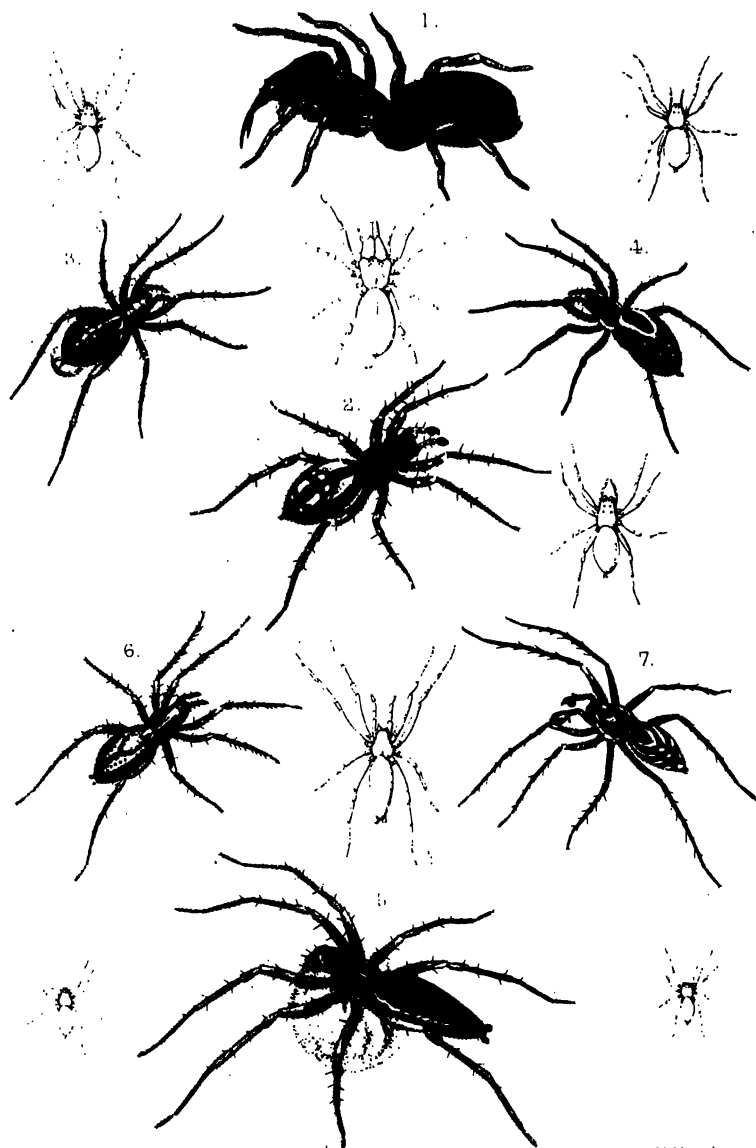
### PLATE III.

#### MYGALIDÆ.

1. *Atypus Sulzeri* ♀, p. 35.

#### LYCOSIDÆ.

2. *Lycosa picta* ♂, p. 41.
3. „ *saccata* ♀, p. 42.
4. „ *piratica* ♀, p. 47.
5. *Dolomedes mirabilis* ♀, p. 49.
6. *Hecaërge spinimana* ♀, p. 52.
7. *Sphasus lineatus* ♂, p. 54.



Tafel XXXIII.

W. Westling

1. *Atypus fulvipes* n. sp. 2. *Atypus pictus* f. 3. *Atypus saevus* f. 4. *Atypus* 5. *Atypus* 6. *Atypus* 7. *Atypus* 8. *Atypus* 9. *Atypus* 10. *Atypus* 11. *Atypus* 12. *Atypus* 13. *Atypus*







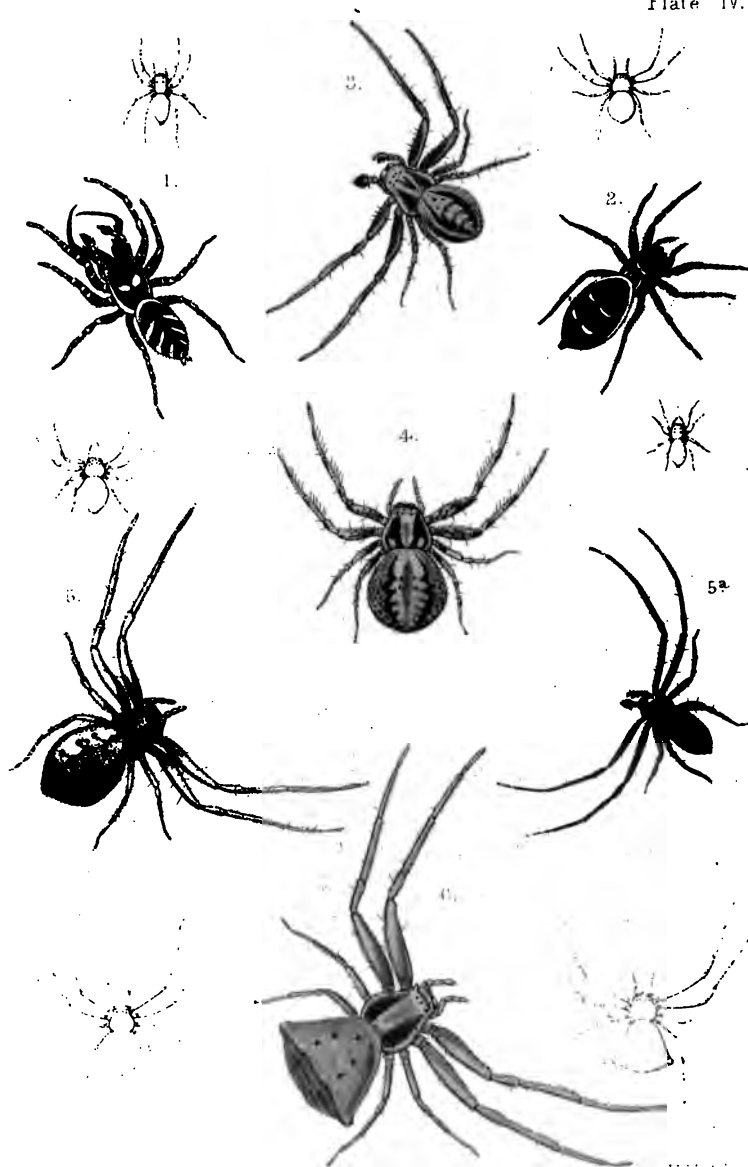
PLATE IV.

SALTICIDÆ.

1. *Salticus scenicus* ♂, p. 56.
2. „ *cupreus* ♀, p. 61.

THOMISIDÆ.

3. *Thomisus cristatus* ♂, p. 68.
4. „ *audax* ♀, p. 70.
5. „ *citreus* ♀, p. 80.
- 5 a. „ „ ♂, p. 80.
6. „ *abbreviatus* ♀, p. 81.



Male specimens.

Female specimens.

1. *Latrodectus mactans*, 2. *L. mactans*, 3. *L. mactans*, 4. *L. mactans*, 5. *L. mactans*, 5a. *L. mactans*, 6. *L. mactans*, 7. *L. mactans*, 8. *L. mactans*, 9. *L. mactans*.

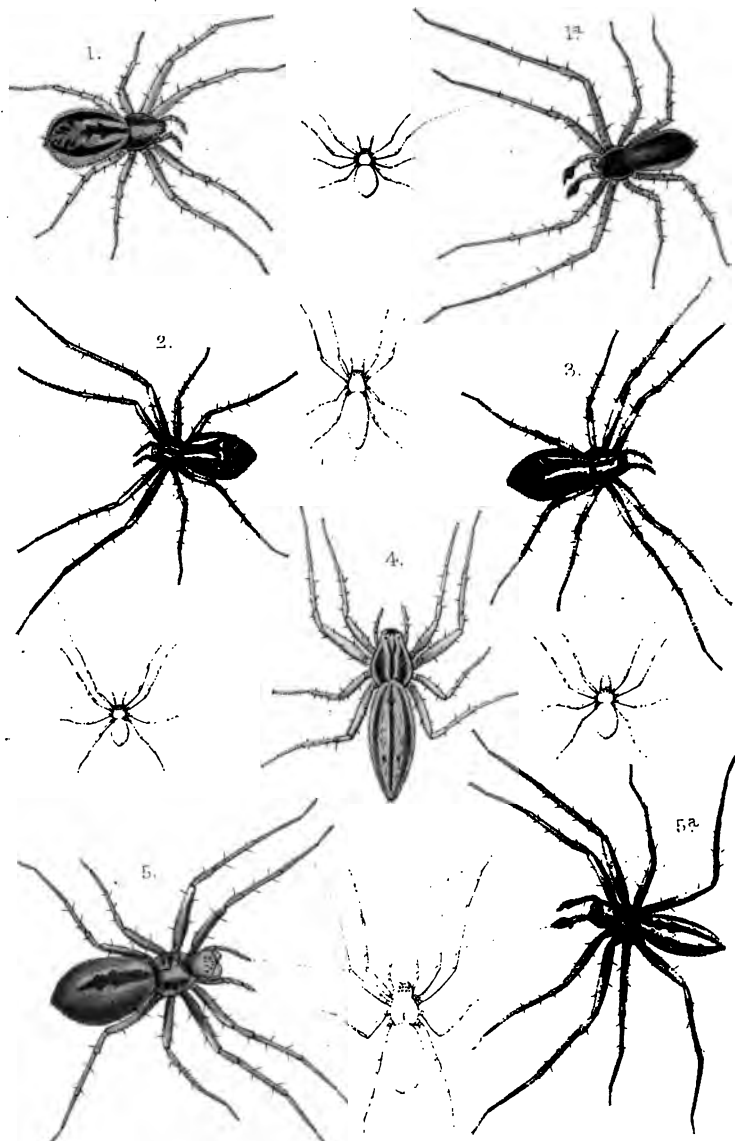




## PLATE V.

### THOMISIDÆ.

1. *Philodromus dispar* ♀, p. 83.
- 1 *a.*       ,,       ,,   ♂, p. 83.
2.       ,,       *elegans* ♀, p. 84.
3.       ,,       *cæspiticolis* ♀, p. 85.
4.       ,,       *oblongus* ♀, p. 88.
5. *Sparassus smaragdulus* ♀, p. 89.
- 5 *a.*       ,,       ,,   ♂, p. 89.



Tafel V. Spinnen.

1. *Philodromus dispar* S. 2. *E. elegans* S. 3. *E. elegans* S.  
 4. *E. elegans* S. 5. *E. elegans* S. 6. *E. elegans* S.  
 7. *E. elegans* S. 8. *E. elegans* S. 9. *E. elegans* S.  
 10. *E. elegans* S.



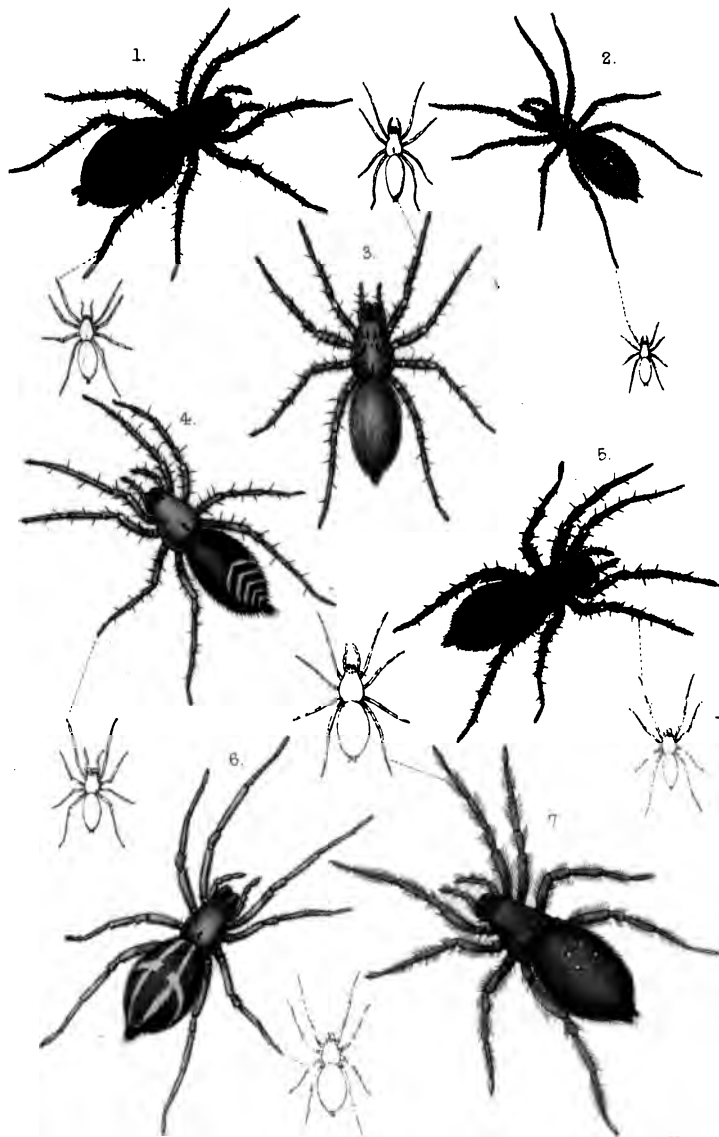




## PLATE VI.

### DRASSIDÆ.

1. *Drassus cupreus* ♀, p. 95.
2. „ *nitens* ♀, p. 98.
3. *Clubiona holosericea* ♀, p. 101.
4. „ *amarantha* ♀, p. 102.
5. „ *accentuata* ♀, p. 107.
6. „ *erratica* ♀, p. 109.
7. *Argyroneta aquatica* ♀, p. 110.



In ten West. and not ac

W. West. ac

- 1 *Dracopis curvipes* 2 *D. curvipes* 3 *Tarantula californica* 4 *C. arizonae* 5 *C. arizonae* 6 *C. arizonae* 7 *C. arizonae*

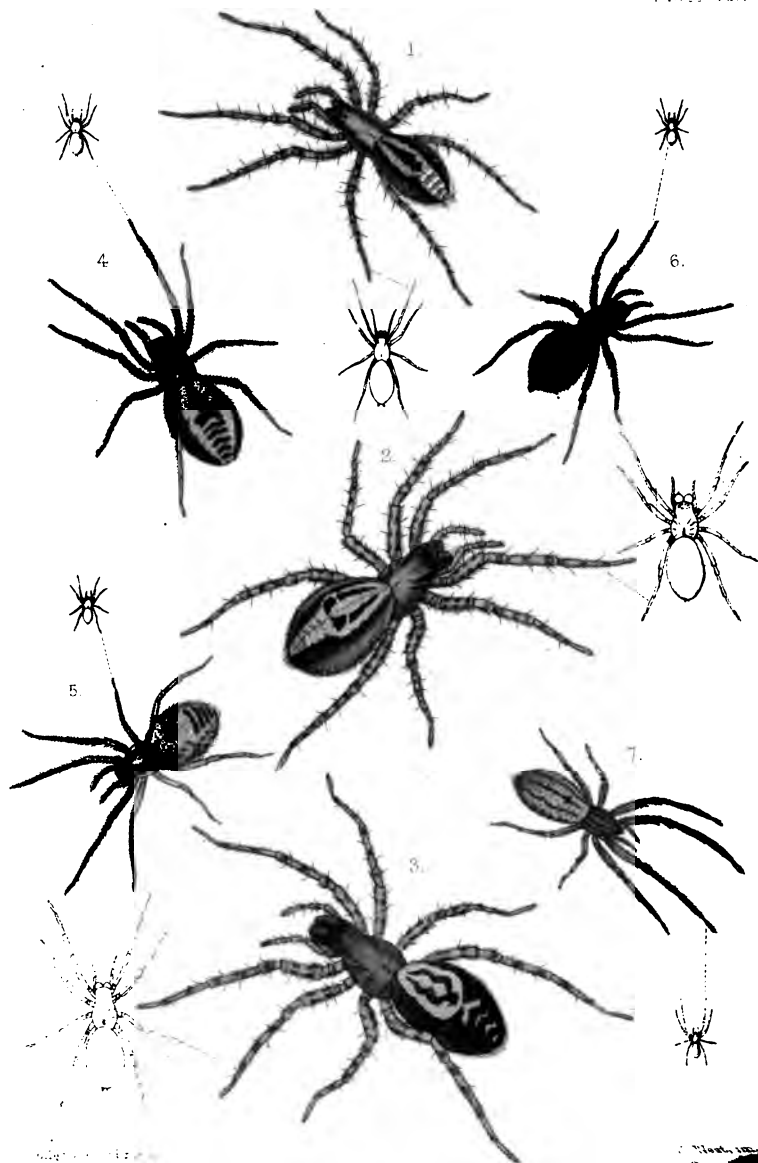




## PLATE VII.

### CINIFLONIDÆ.

1. *Ciniflo atrox* ♀, p. 115.
2. „ *similis* ♀, p. 116.
3. „ *ferox* ♀, p. 116.
4. *Ergatis benigna* ♀, p. 119.
5. „ *pallens* ♀, p. 120.
6. „ *luteus* ♀, p. 121.
7. *Veleda lineata* ♀, p. 122.



1. *Dugesiella* 2. *Cryptops* 3. *Scorpiones* 4. *Dugesiella* 5. *Cryptops* 6. *Scorpiones* 7. *Dugesiella* 8. *Cryptops*



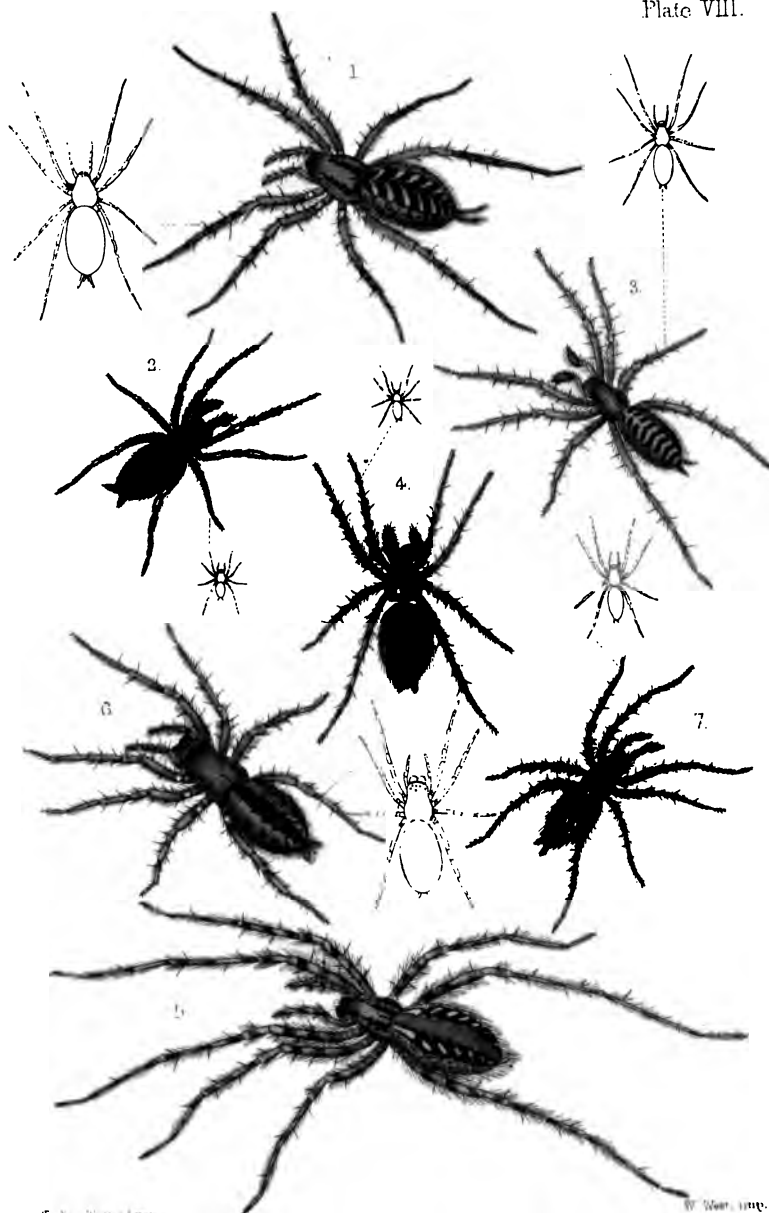
1



PLATE VIII.

AGELENIDÆ.

1. *Agelena labyrinthica* ♀, p. 123.
2. „ *elegans* ♂, p. 126.
3. „ *brunnea* ♂, p. 127.
4. „ *Hyndmanii* ♀, p. 129.
5. *Tegenaria domestica*, *life size*, ♀, p. 131.
6. *Cælotes saxatilis* ♀, p. 136.
7. *Textrix lycosina* ♂, p. 137.



Taken near Alton.

W. W. W. imp.

1 *Alopius a. longipalpus* ♂. 2 *A. ologus* ♂.  
3 *A. hyalipalpus* ♂. 4 *A. ologus* ♂.  
5 *Textrix hirsuta* ♂.

3 *A. fronsa* ♂.  
6 *Corymbus nazarethi* ♂.

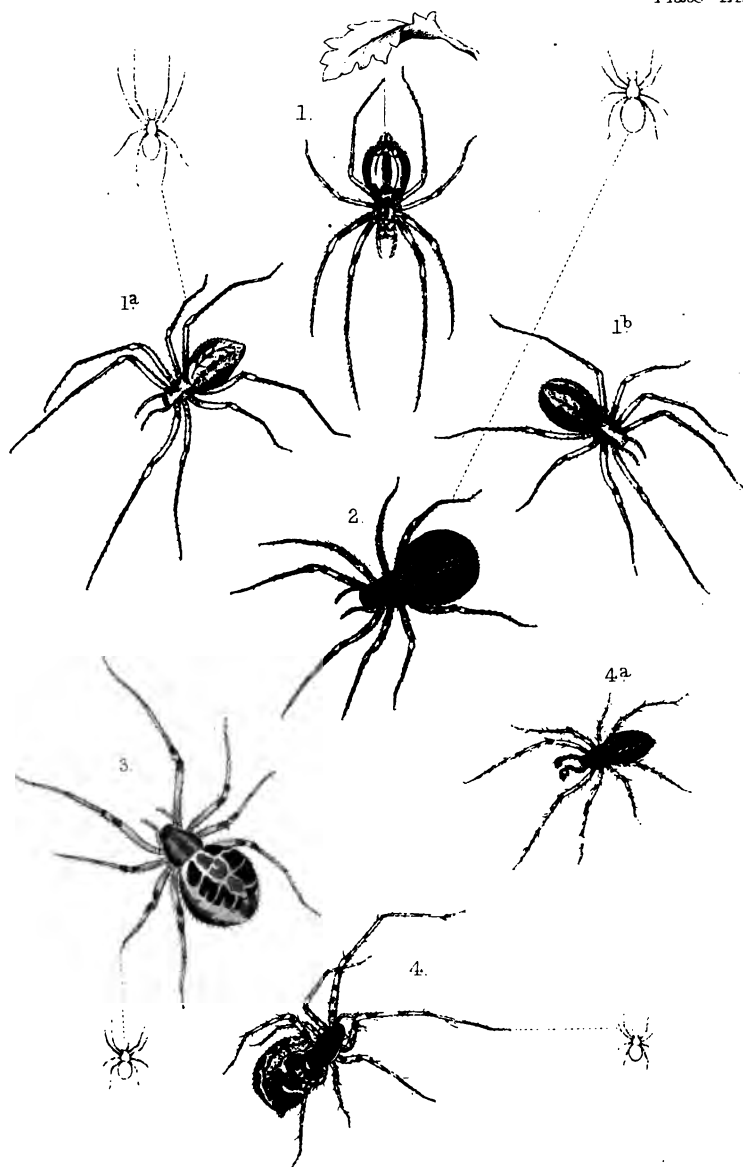




## PLATE IX.

### THERIDIIDÆ.

1. *Theridion lineatum* ♀, p. 139.
- 1 *a.*     „             „     ♀, *under side.*
- 1 *b.*     „             „     ♀, *variety.*
2.       „       *quadripunctatum* ♀, p. 141.
3.       „       *nervosum* ♀, p. 144.
4.       „       *denticulatum* ♀, p. 146.
- 4 *a.*     „             „       ♂, p. 146.



Tuffen West, sc. ad nat.

W/ Wesg imp.

1. *Theridion lineatum*, ♀ 1a. *T. lineatum*, ♀ 1b. *T. lineatum*, ♀.  
 2. *T. quadripunctatum*, ♀ 3. *T. nervosum* ♀ 4. *T. denticulatum*, ♀. 4a. *T. denticulatum*, ♂.



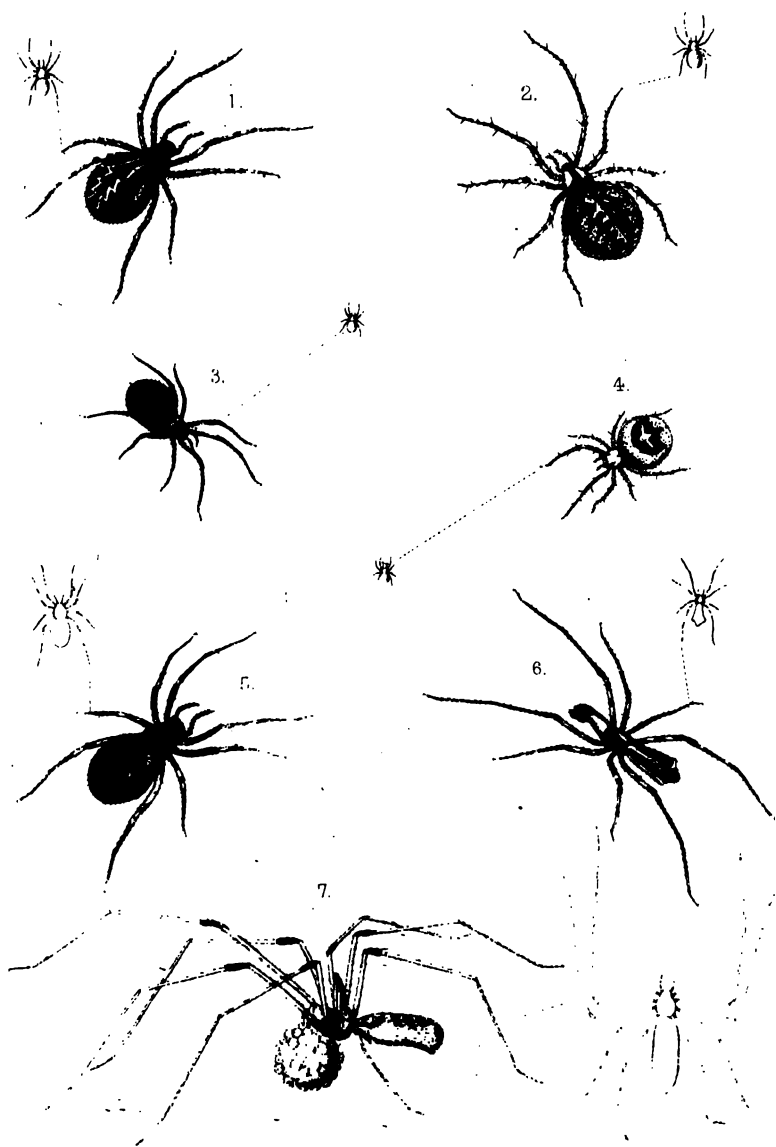




## PLATE X.

### THERIDIIDÆ.

1. *Theridion pictum* ♀, p. 145.
2.     "     *varians* ♀, p. 148.
3.     "     *inornatum* ♀, p. 151.
4.     "     *pallens* ♀, p. 152.
5.     "     *signatum* ♀, p. 156.
6.     "     *angulatum* ♂, p. 157.
7. *Pholcus phalangioides* ♀, p. 162.



Spiders Wied. and nat.

1. *Theridion pictum*, ♀. 2. *T. varians*, ♀. 3. *T. inornatum*, ♂. 4. *T. pallens*, ♂.  
5. *T. nigritum*, ♀. 6. *T. anellatum*, ♂. 7. *Pholus phalangoides*, ♀.

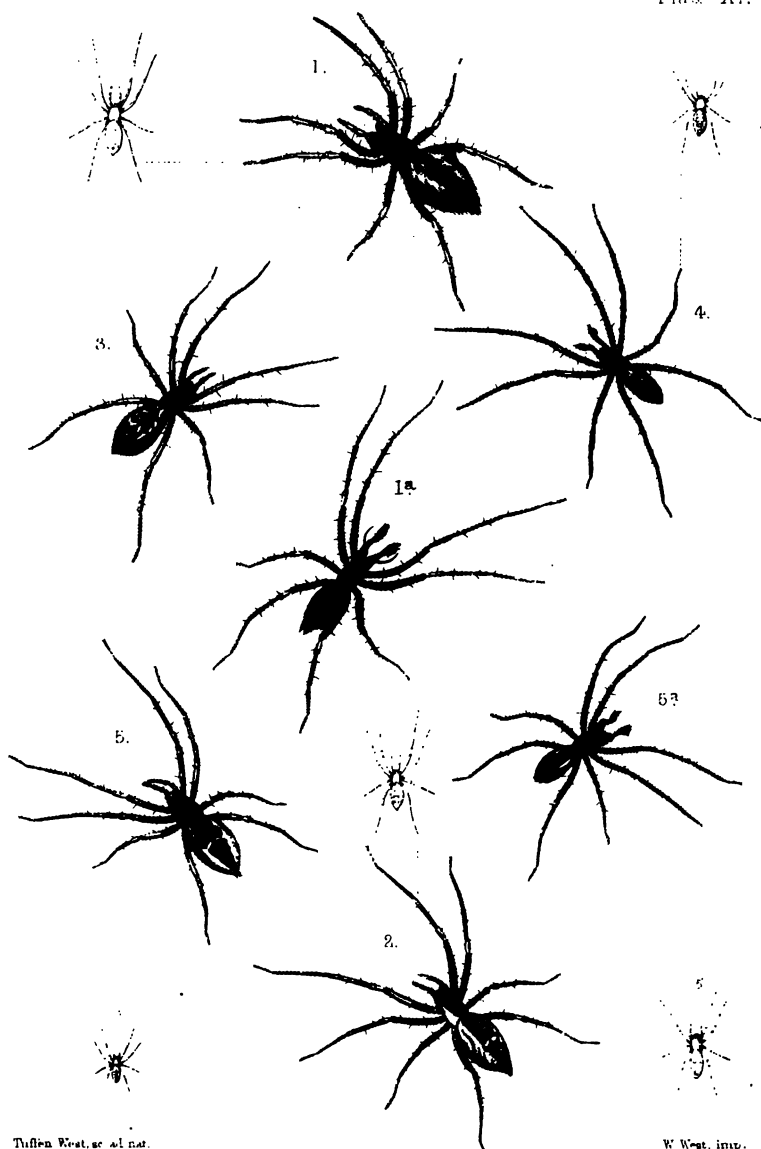




## PLATE XI.

### LINYPHIIDÆ.

1. *Linyphia montana* ♀, p. 163.
- 1 a.    ,,        \*    ,,   ♂, p. 163.
2.       ,,       *triangularis* ♀, p. 165.
3.       ,,       *tenuis* ♀, p. 109.
4.       ,,       *minuta* ♂, p. 177.
5.       ,,       *pratensis* ♀, p. 180.
- 5 a.    ,,        ,,       ♂, p. 180.



Tufsa West, sc. al. nat.

W. West, imp.

1. *Linyphia montana*, ♀. 13. *L. montana*, ♂. 2. *L. triangularis*,  
3. *L. tenuis*, ♀. 4. *L. minuta*, ♂. 5. *L. pratensis*, ♂. 52. *L. pratensis*, ♂.



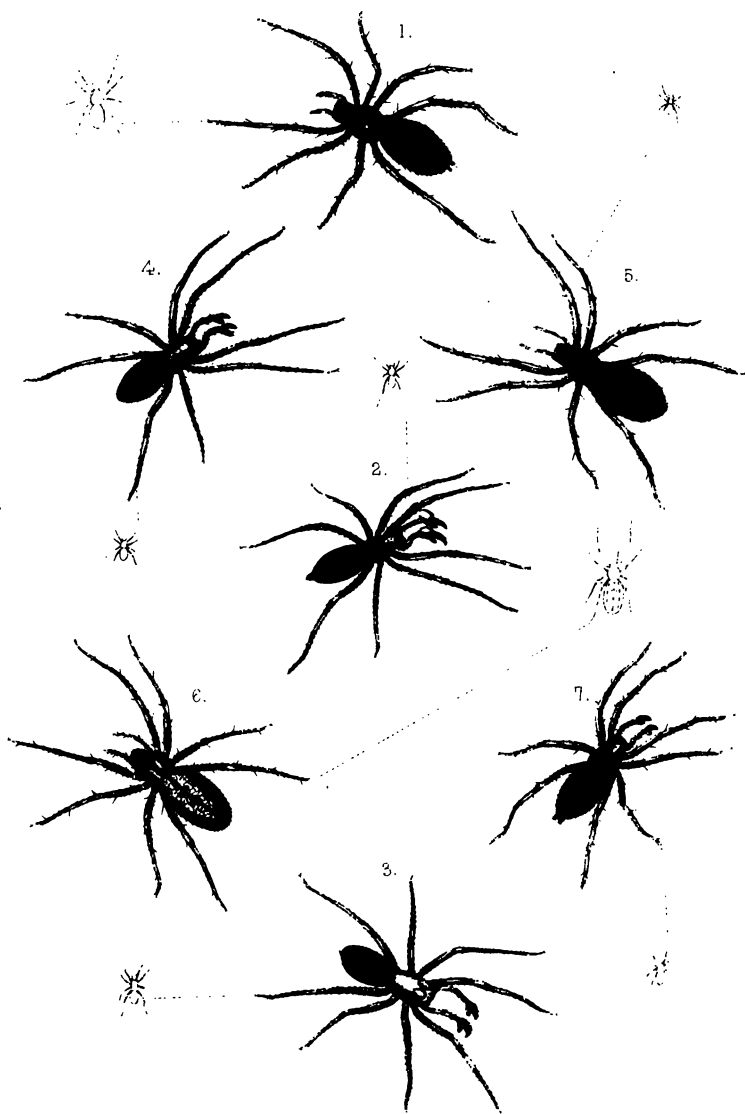




## PLATE XII.

### LINYPHIIDÆ.

1. *Neriëne bicolor* ♀, p. 184.
2. „ *cornigera* ♂, p. 186.
3. „ *bituberculata* ♂, p. 190.
4. „ *rubella* ♂, p. 198.
5. „ *pilosa* ♀, p. 199.
6. „ *trilineata* ♀, p. 199.
7. „ *errans* ♂, p. 201.



Tylen. Westw. ad nat.

W. Westw. ad nat.

1. *Neriene bicolor*, ♀. 2. *N. cornigera*, ♀. 3. *N. bubibercolata*, ♂.  
 4. *N. rubella*, ♂. 5. *N. pilosa*, ♀. 6. *N. trilineata*, ♀. 7. *N. errans*, ♂.

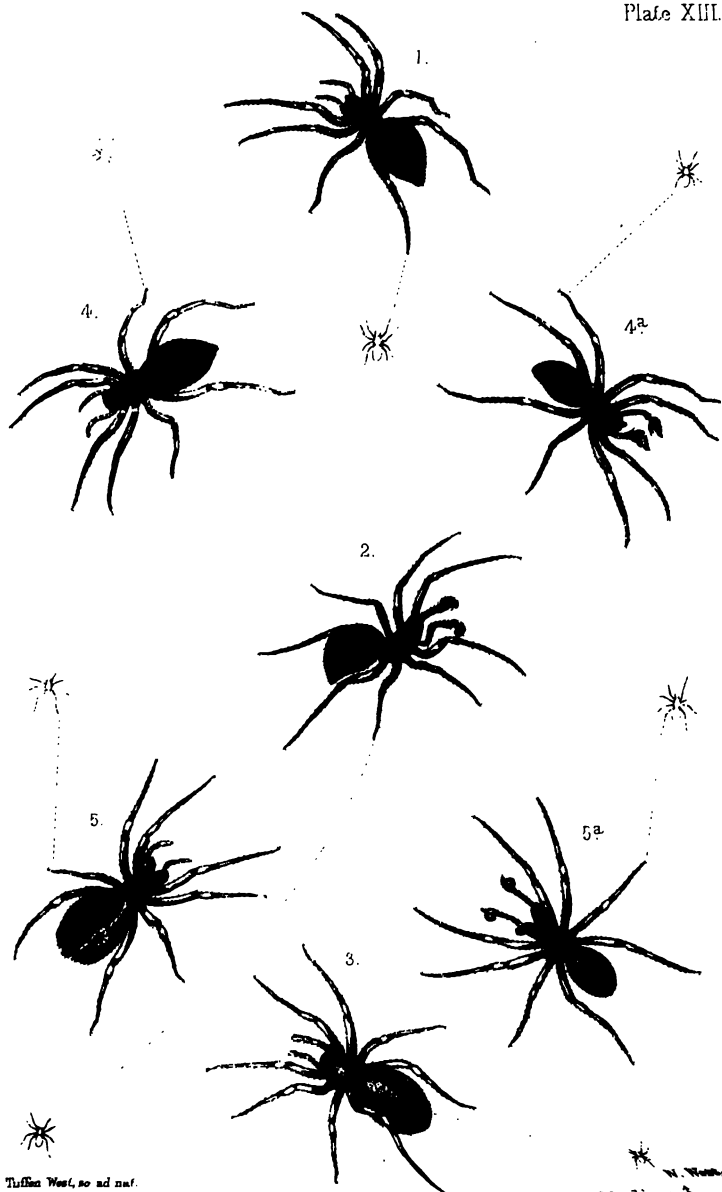




## PLATE XIII.

### LINYPHIIDÆ.

1. Walckenaëra acuminata ♀, p. 205.
2.       ,,       pratensis ♂, 209.
3.       ,,       ludicra ♂, p. 211.
4.       ,,       antica ♀, p. 214.
- 4 a.     ,,       ,,       ♂, p. 214.
5. Pachygnatha Degeerii ♀, p. 220.
- 5 a.     ,,       ,,       ♂, p. 220.



Tuffen West, so ad nat.

1. *Walckenaera acuminata*, ♀. 2. *W. pratensis*, ♂. 3. *W. ludica*, ♂.  
 4. *W. antica*, ♀. 4a. *W. antica*, ♂. 5. *Pachygnatha Degeerii*, ♀. 5a. *P. Degeerii*, ♂.



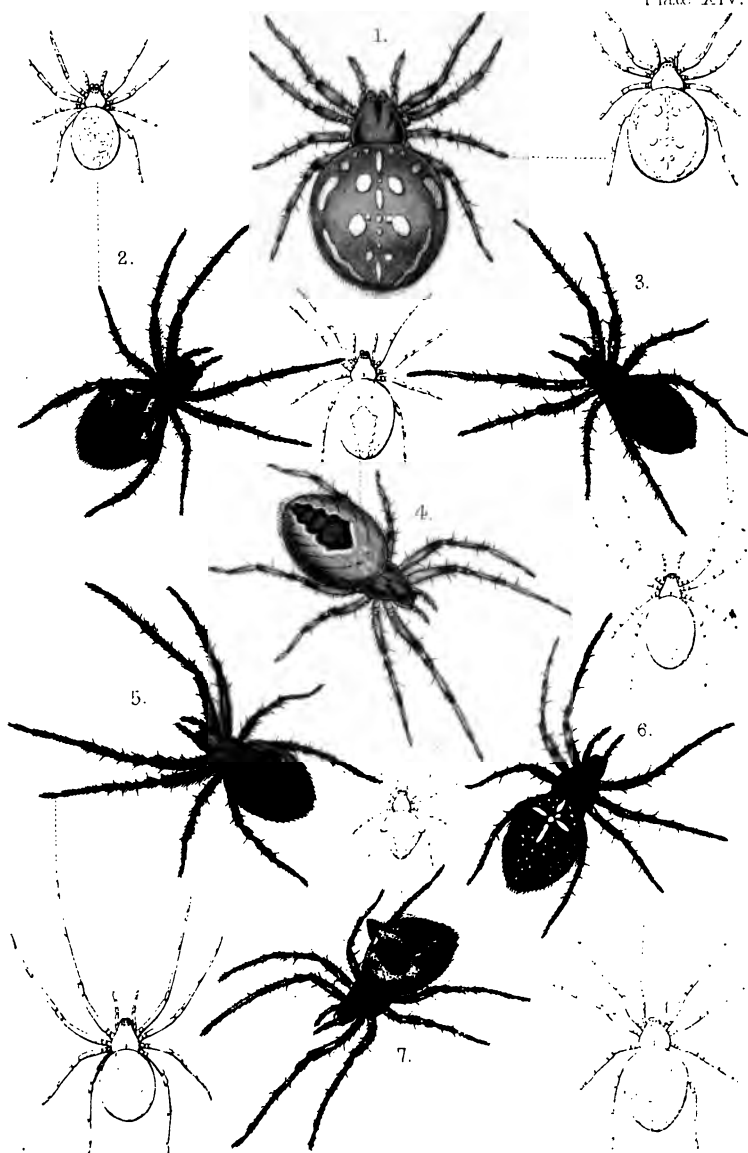




PLATE XIV.

EPEİRIDÆ.

1. *Epeıra quadrata* ♀, p. 226.
2. „ *apoclisa* ♀, p. 229.
3. „ *sericata* ♀, p. 230.
4. „ *scalaris* ♀, p. 232.
5. „ *umbratica* ♀, p. 233.
6. „ *diadema* ♀, p. 238.
7. „ *angulata* ♀, p. 243.



Tuffen West, sc. ad nat.

W. West, inv.

1. *Epeira quadrata*, ♀. 2. *E. apoclista*, ♀. 3. *E. sericata*, ♀.  
 4. *E. scalaris*, ♀. 5. *E. umbratica*, ♀. 6. *E. diadema*, ♀. 7. *E. angulata*, ♀.



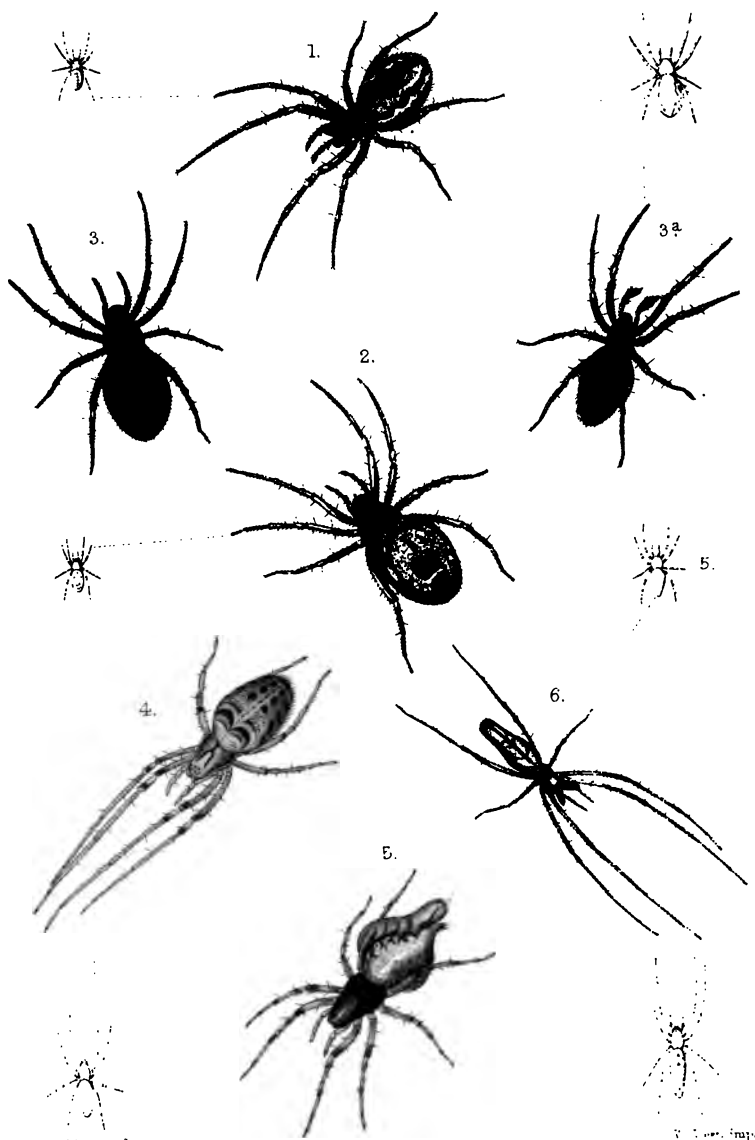


PLATE XV.

EPEIRIDÆ.

1. *Epeira callophylla* ♀, p. 245.
2. „ *acalypha* ♀, p. 247.
3. „ *bella* ♀, p. 248.
- 3 a. „ „ ♂, p. 248.
4. „ *inclinata* ♀, p. 252.
5. „ *conica* ♀, p. 254.
6. *Tetragnatha extensa* ♀, p. 257.

Plafe XV.



Taken from nature.

Fig. 1. Sp. imp.

1. *E. calypso* 2. *E. calypso* 3. *E. calypso* 4. *E. calypso*  
 5. *E. calypso* 6. *E. calypso*



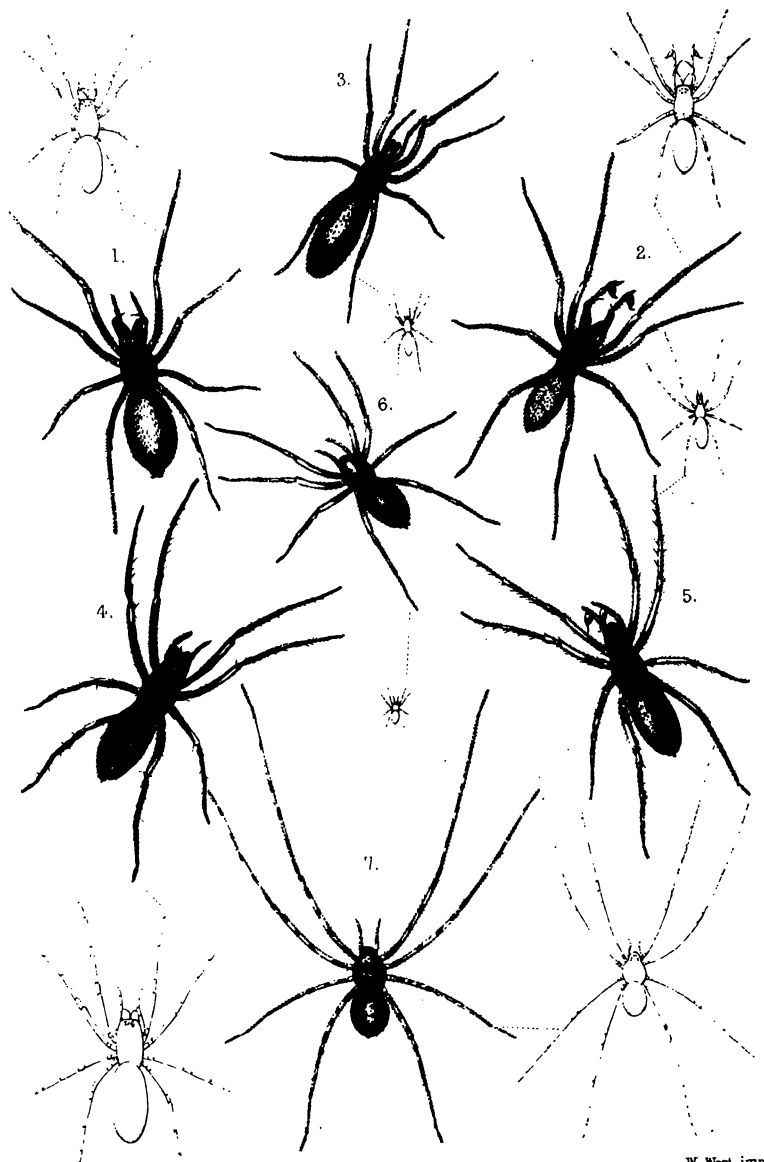




## PLATE XVI.

### DYSDERIDÆ.

1. *Dysdera erythrina* ♀, p. 260.
2. „ *rubicunda* ♂, p. 261.
3. „ *Hombergii* ♀, p. 261.
4. *Segestria perfida* ♀, p. 263.
5. „ *senoculata* ♂, p. 263.
6. *Oonops pulcher* ♀, p. 265.
7. *Scytodes thoracica* ♀, p. 267.



Tuffen West. sc. ad nat.

W. West. imp.

- |                                      |                              |                               |
|--------------------------------------|------------------------------|-------------------------------|
| 1. <i>Dysdera erythrina</i> , ♀.     | 2. <i>D. rubicunda</i> , ♂.  | 3. <i>D. flombergi</i> , ♀.   |
| 4. <i>Scotocrypta perfida</i> , ♀.   | 5. <i>S. senoculata</i> , ♂. | 6. <i>Oonops pulcher</i> , ♀. |
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